STATIQUE GRAPHIQUE

APPLIQUÉE AUX CONSTRUCTIONS

TOITURES, PLANCHERS, POUTRES, PONTS, ETC.

PAR

MAURICE MAURER

INGÉNIEUR

Professeur agrégé à l'École Polytechnique de Budapesth.

UN VOLUME GRAND IN-8 ET UN ATLAS DE 19 PLANCHES IN-4

PARIS

LIBRAIRIE POLYTECHNIQUE DE J. BAUDRY, Éditeur

15, rue des Saints-Pères, 15

MÊME MAISON A LIÉGE : 19, RUE LAMBERT-LEBÈGUE

1882

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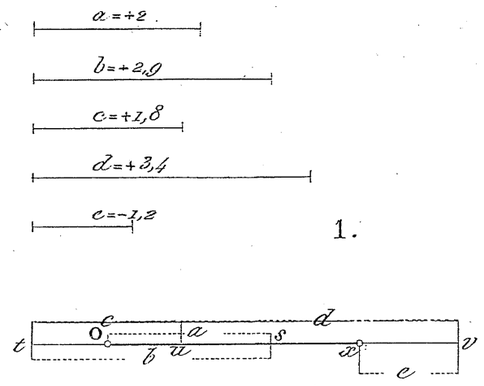

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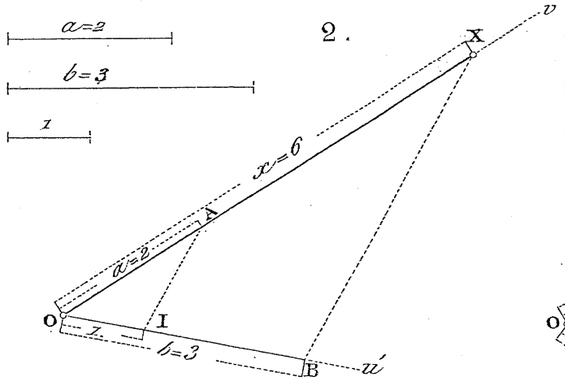

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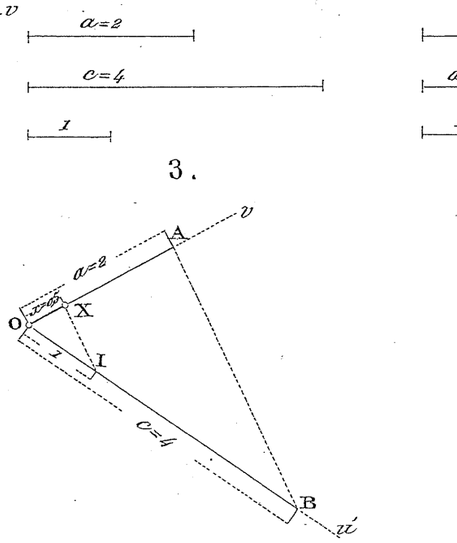

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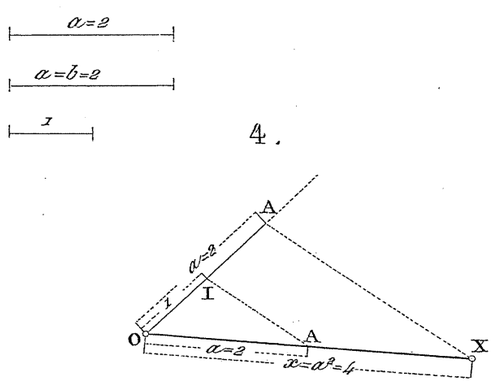

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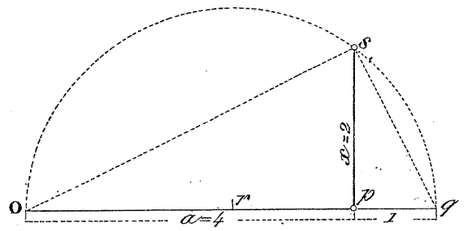

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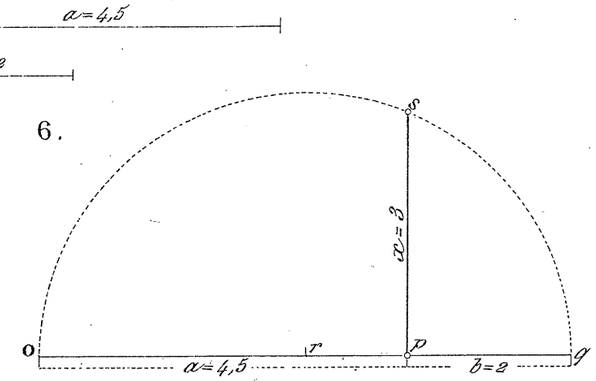

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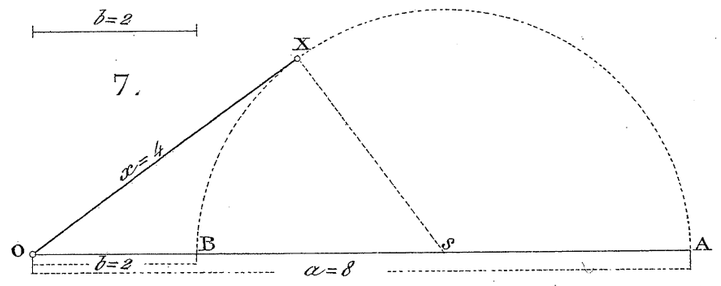

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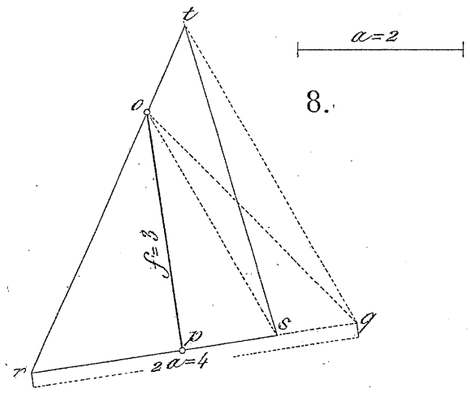

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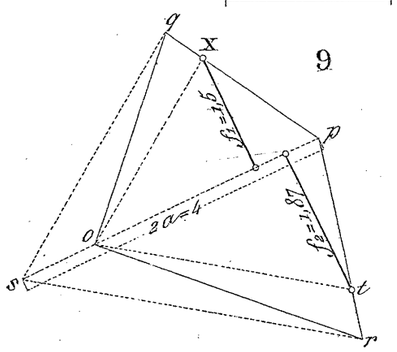

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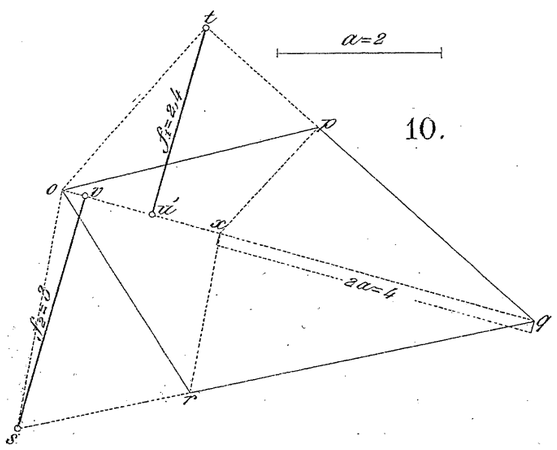

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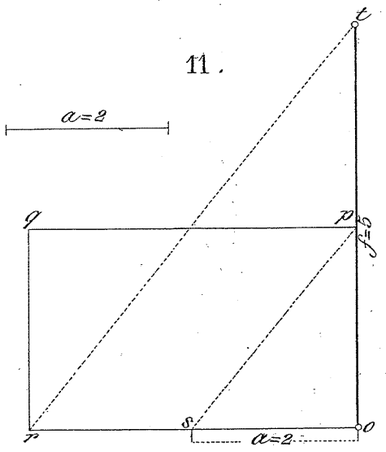

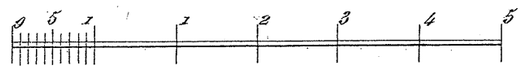

Établ.t et impr.ie de J.B audry à Liège.

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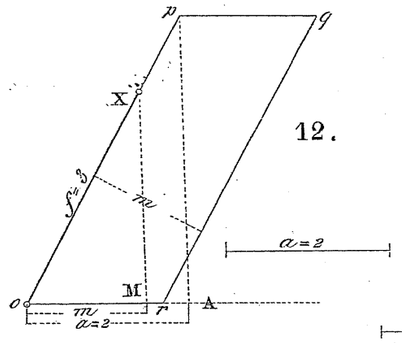

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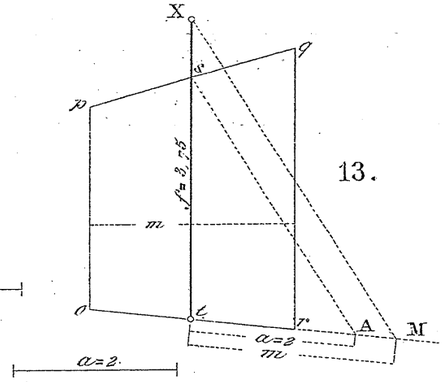

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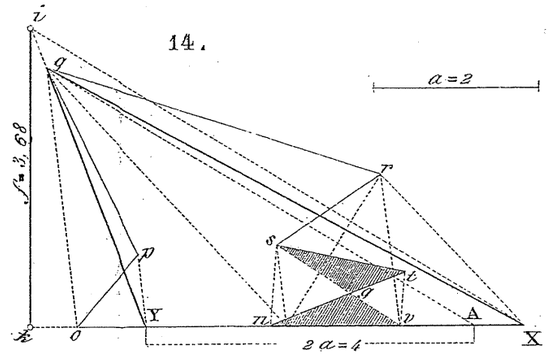

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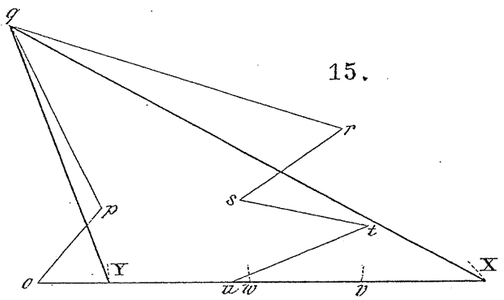

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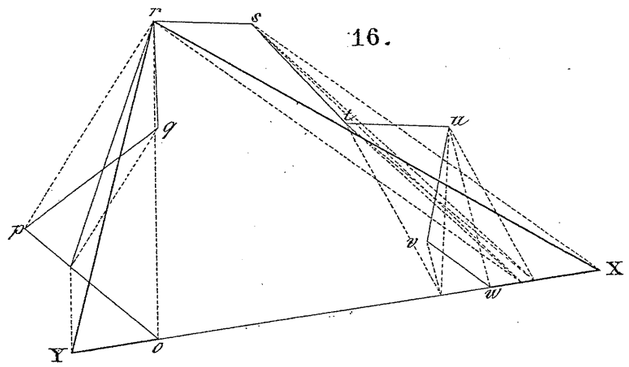

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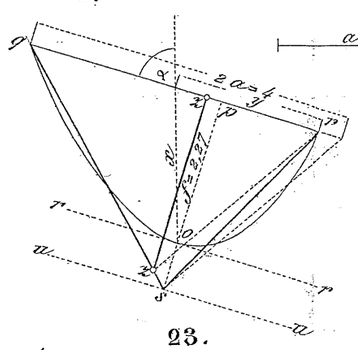

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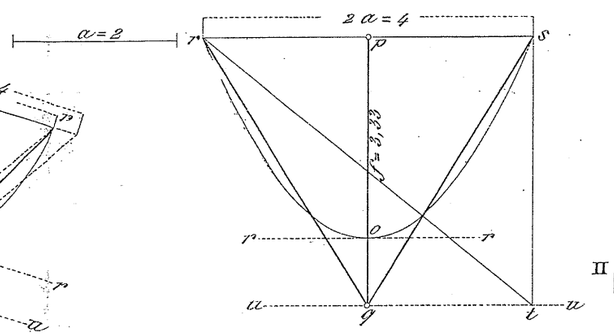

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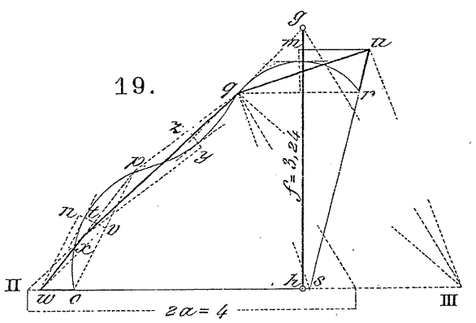

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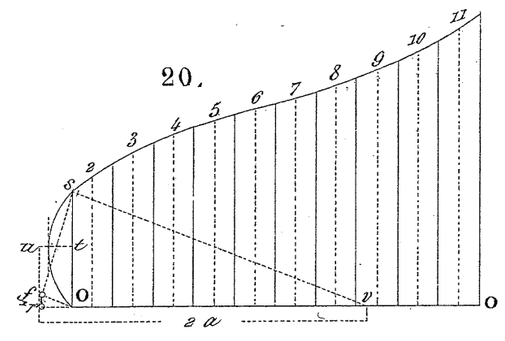

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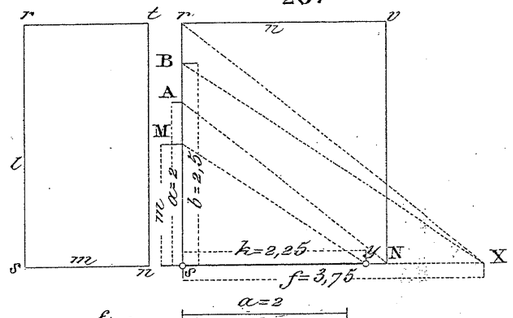

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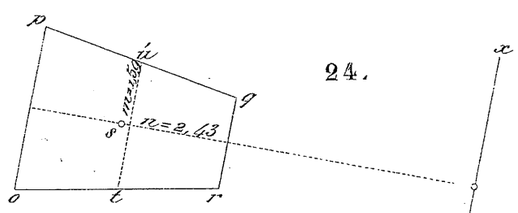

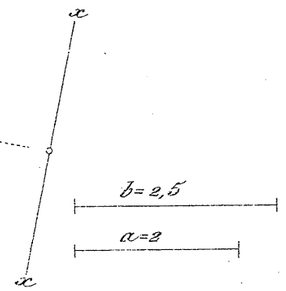

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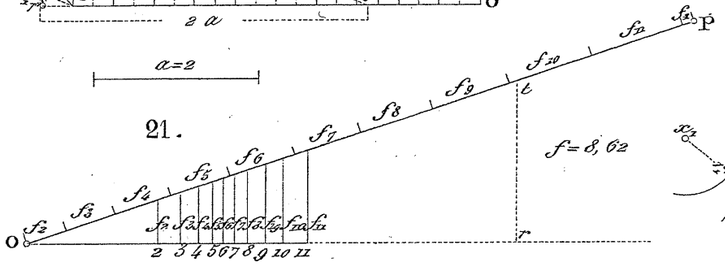

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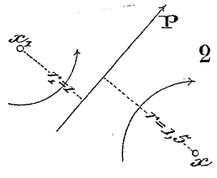

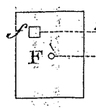

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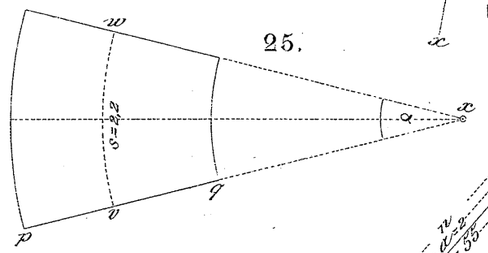

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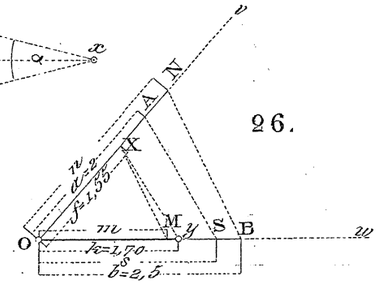

Établ.t et imp.ie de J. Baudry, à Liége.

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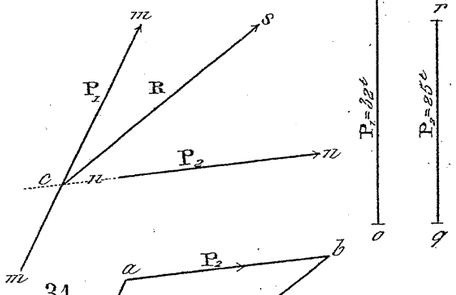

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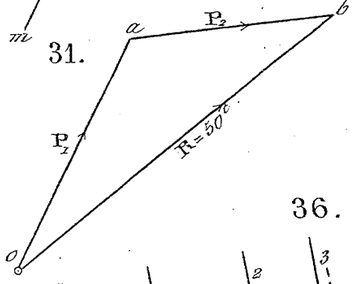

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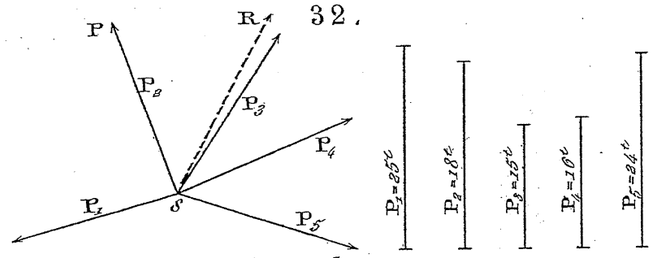

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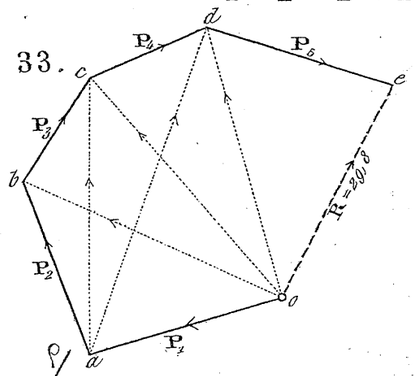

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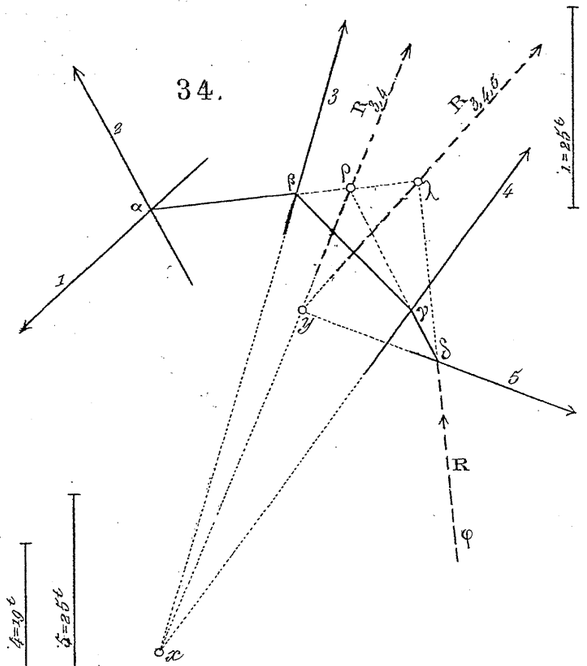

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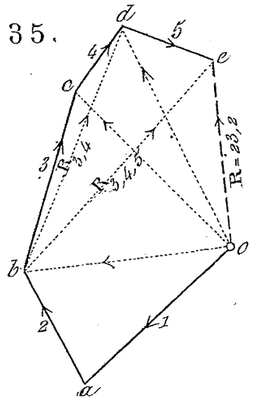

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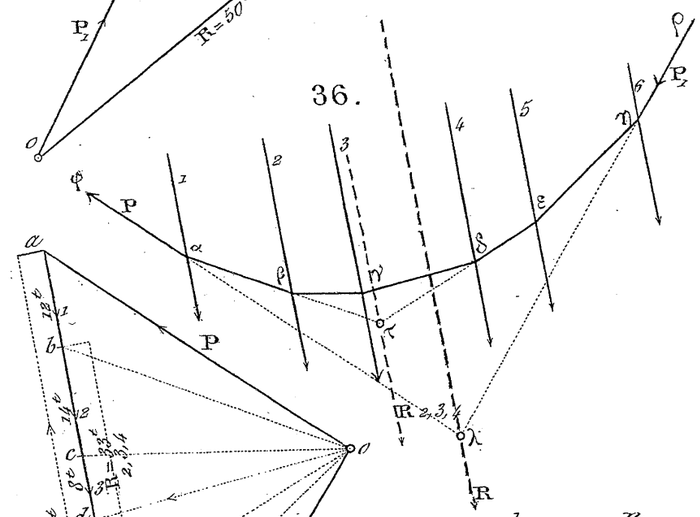

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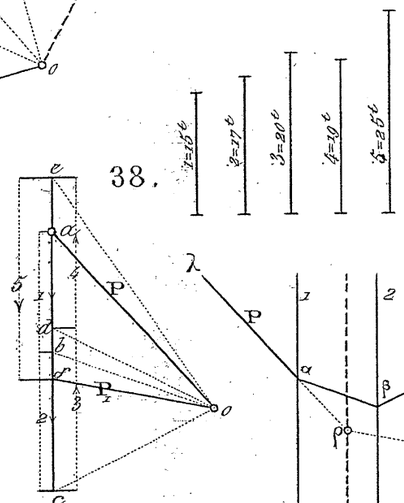

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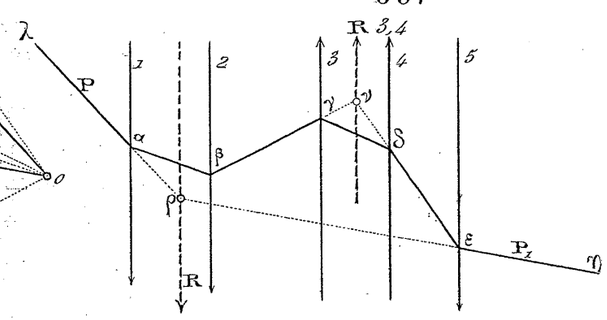

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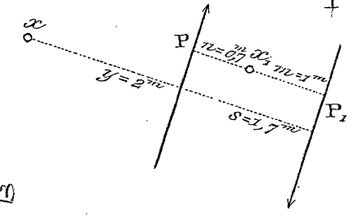

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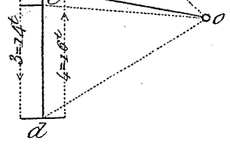

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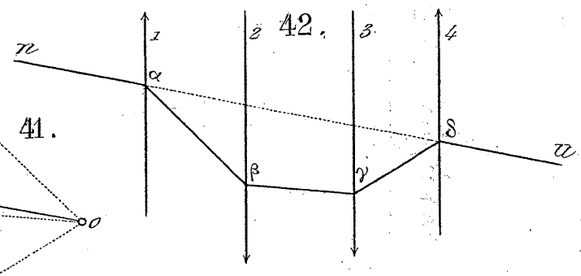

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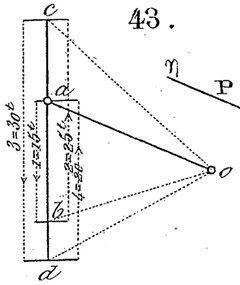

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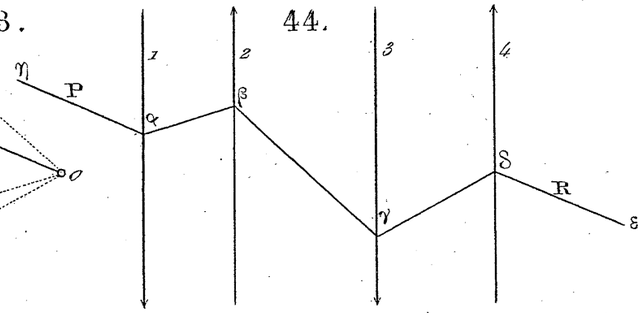

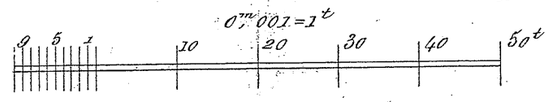

Établt et imprie de J. Baudry, à Liége.

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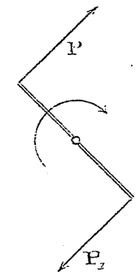

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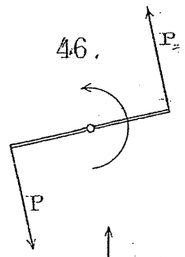

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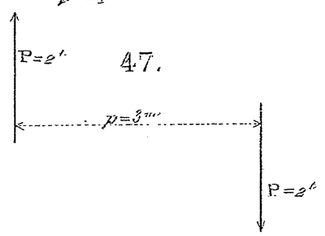

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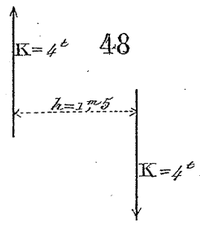

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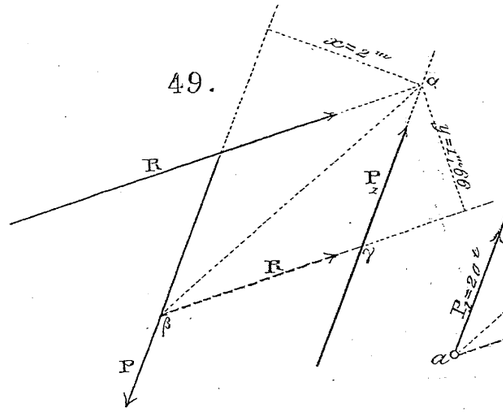

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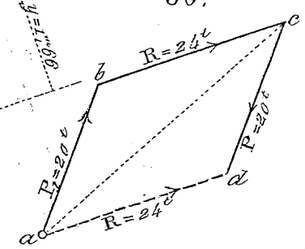

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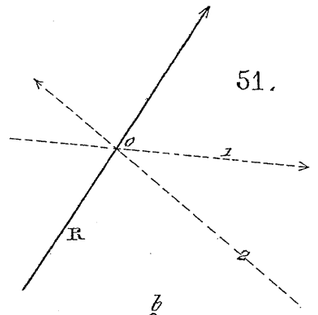

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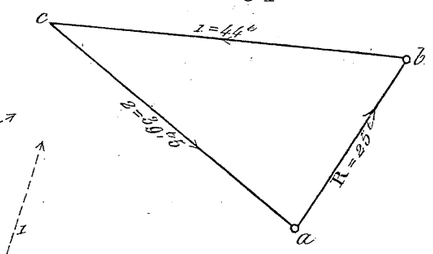

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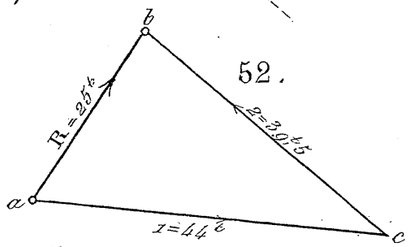

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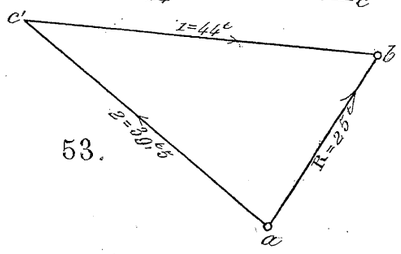

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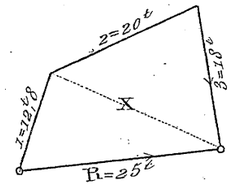
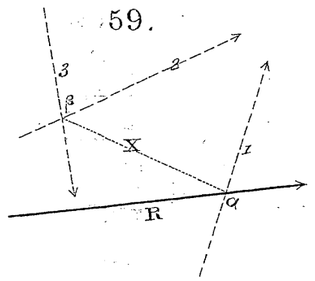
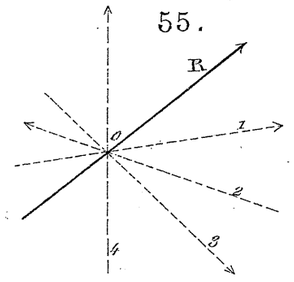


59.



R=18ᵏ
1=15ᵏ
2=20ᵏ

55.



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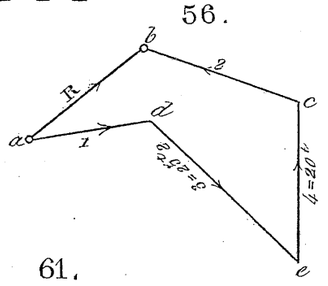

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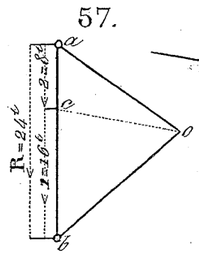
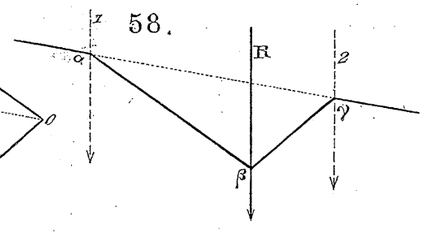
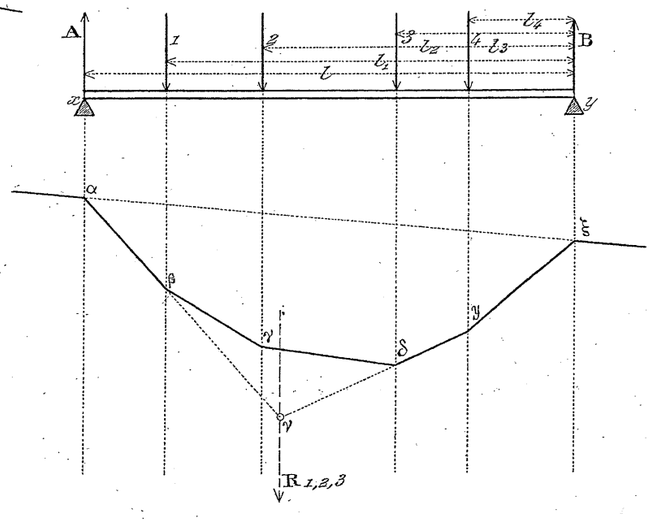


58.



69.



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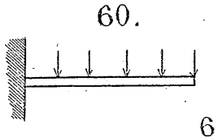

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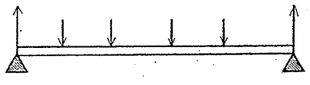
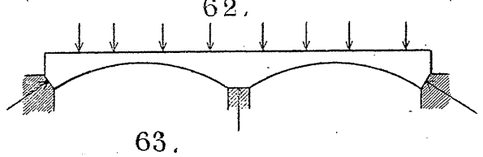
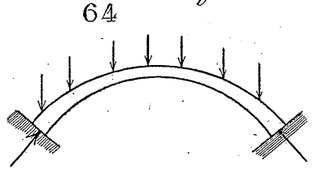


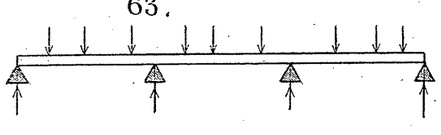
62.



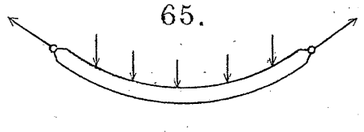
64



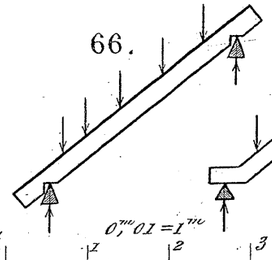
63.



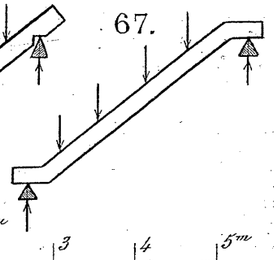
65.

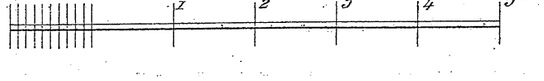


66.

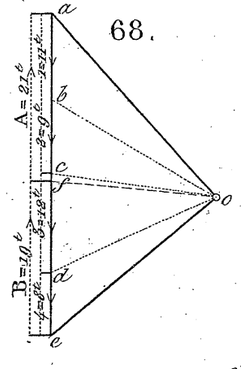


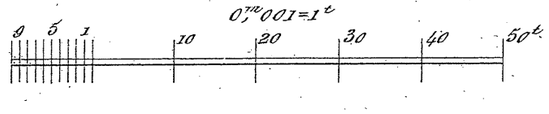
67.





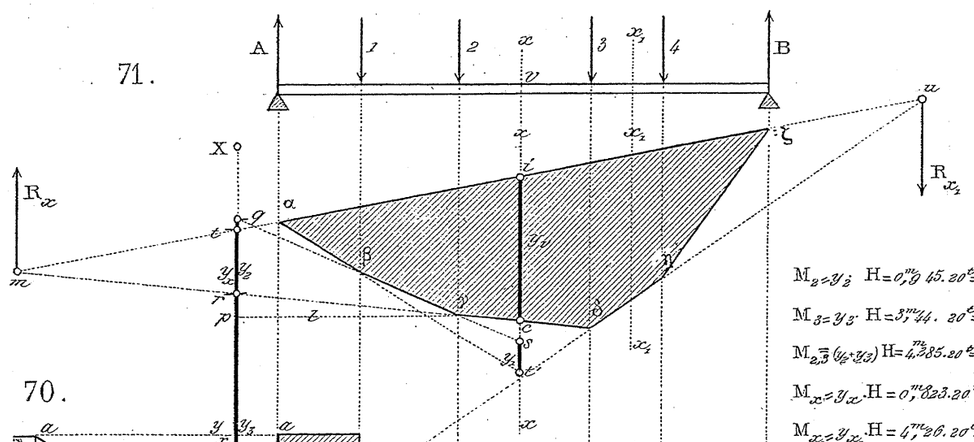
68.



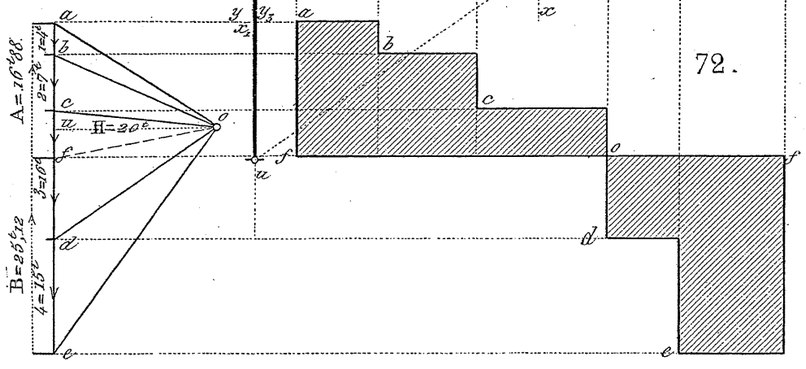


Etablt et imprie de J.B Lamary à Liège.

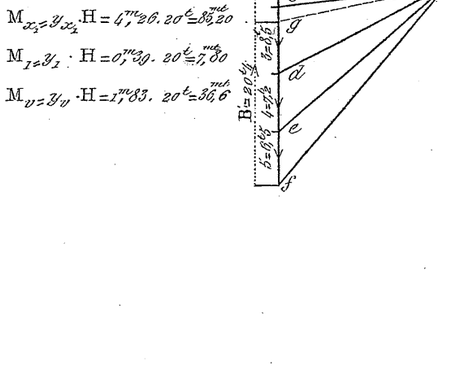
71.



70.



72.



$M_2 = y_2 \cdot H = 0{,}^m9\,45 . 20^t = 18{,}^{mt}9$

$M_3 = y_3 \cdot H = 3{,}^m44 . 20^t = 68{,}^{mt}8$

$M_{2\frac{1}{2}3} (y_2, y_3)\, H = 4{,}^m385 . 20^t = 87{,}^{mt}7$

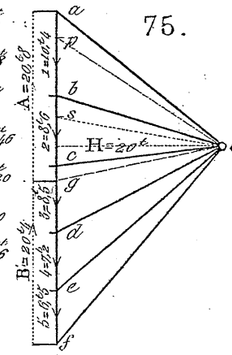
$M_x = y_x \cdot H = 0{,}^m823 . 20^t = 16{,}^{mt}46$

$M_{x_1} = y_{x_1} \cdot H = 4{,}^m26 . 20^t = 86{,}^{mt}20$

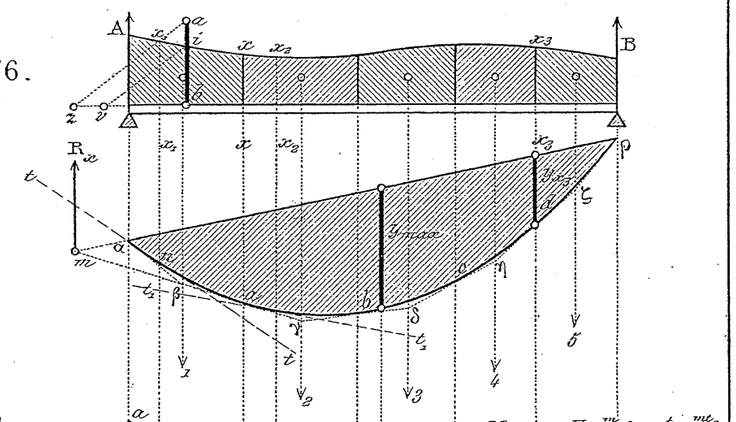
$M_1 = y_1 \cdot H = 0{,}^m39 . 20^t = 7{,}^{mt}80$

$M_v = y_v \cdot H = 1{,}^m83 . 20^t = 36{,}^{mt}6$

75.



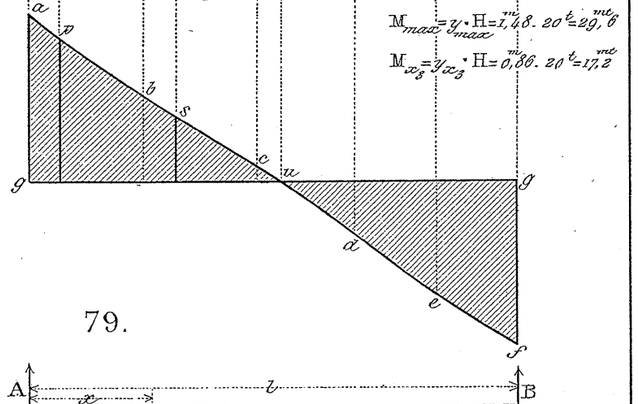
76.



$M_{max} = y_{max} \cdot H = 1{,}^m48 . 20^t = 29{,}^{mt}6$

$M_{x_3} = y_{x_3} \cdot H = 0{,}^m86 . 20^t = 17{,}^{mt}2$

77.



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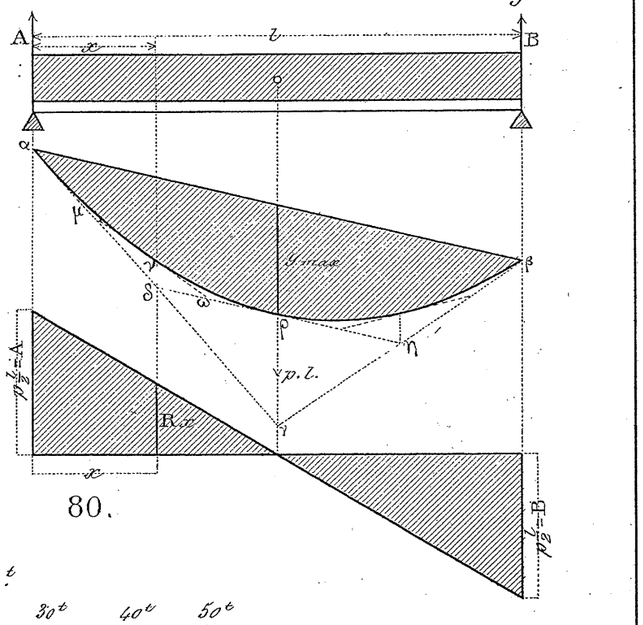
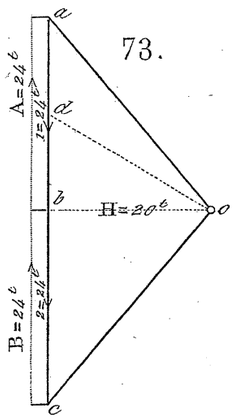
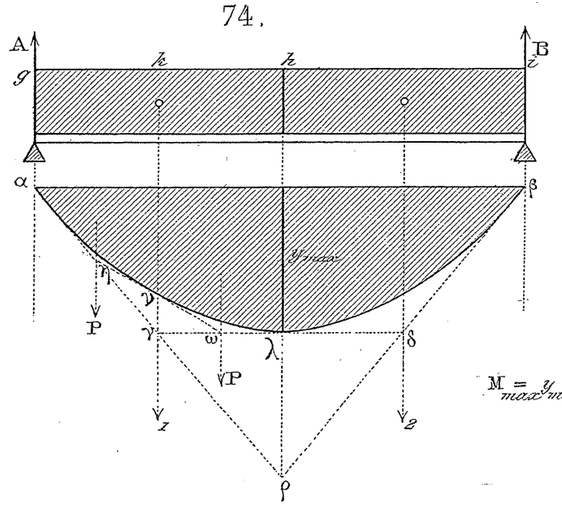


80.

73.



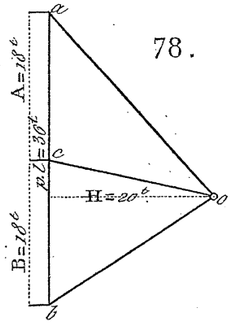
74.



$M = \frac{3}{8} p l^2$

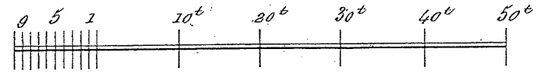
$M_{max} = y_{max} \cdot H = 1{,}^m35 . 20^t = 27^{mt}$

78.

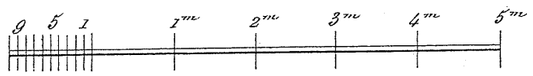


$M_{max} = y_{max} \cdot H = 1{,}^m8 . 20^t = 36^{mt}$

$0{,}^m01 = 1^t$

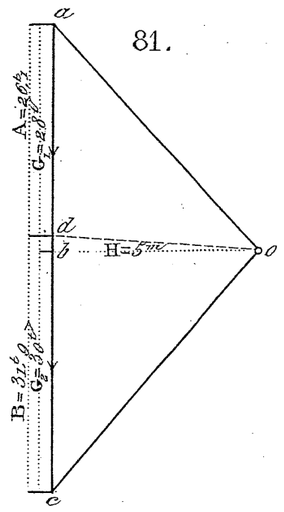


$0{,}^m01 = 1^m$

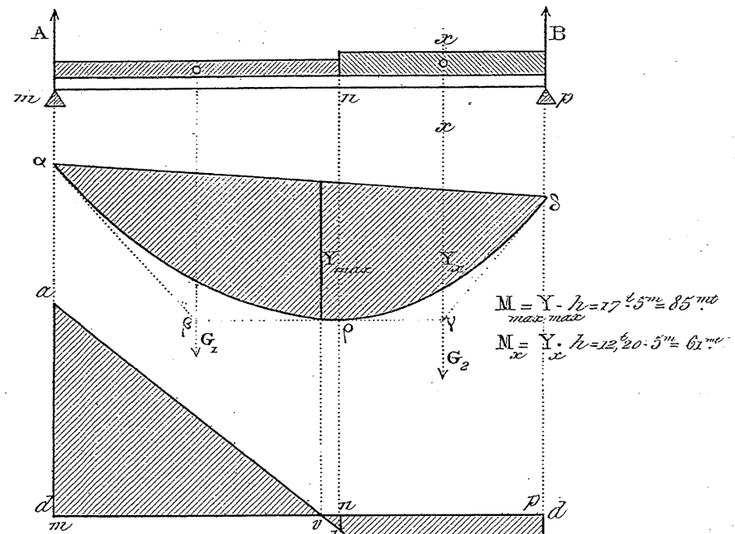


Etabl^t a imp^ie de J. Baudry, à Liége.

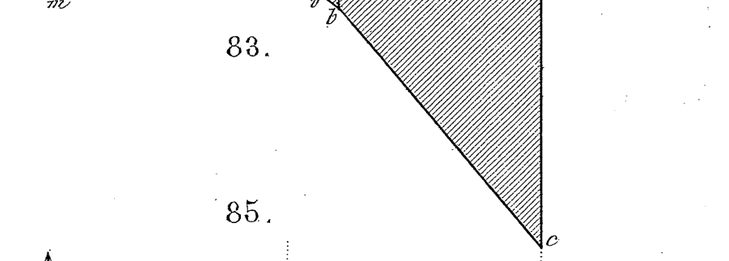
81.



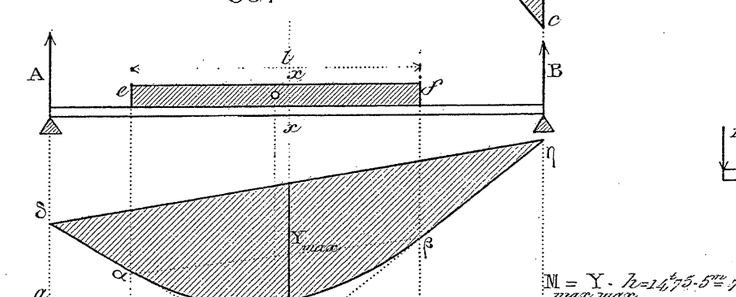
82.



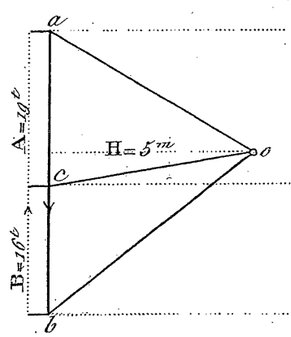
83.



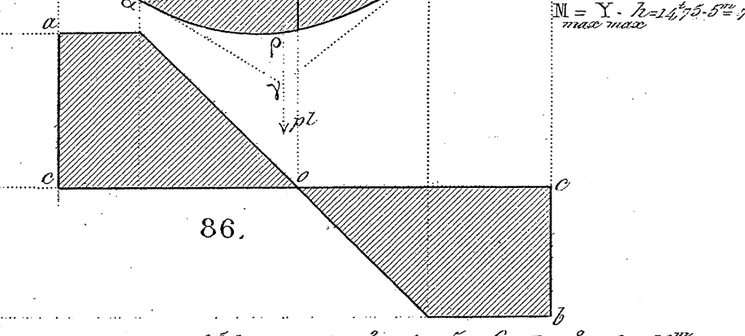
85.



84.

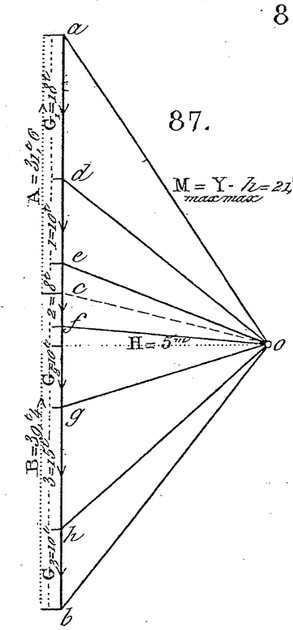


86.



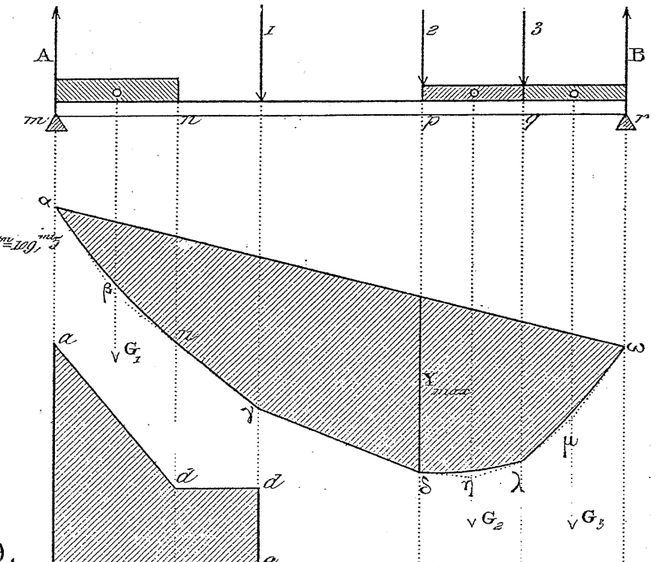
M = Y · h = 14,t75·5m = 73mt,75
max max

87.

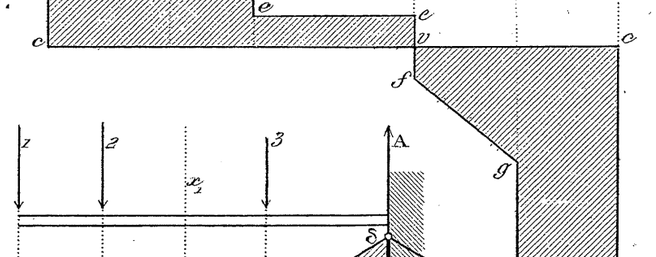


M = Y · h = 21,t9·5m = 109,mt5
max max

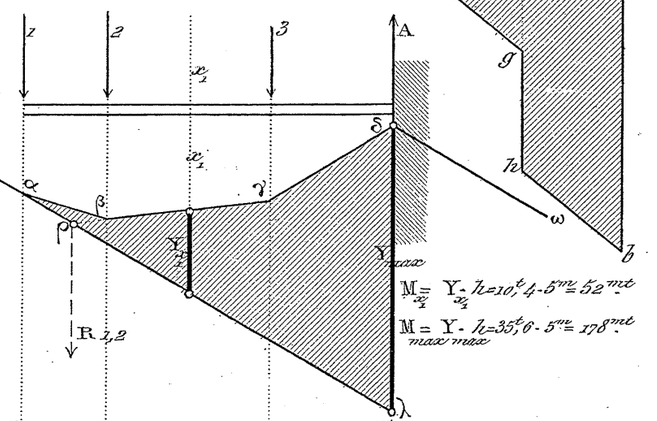
88.



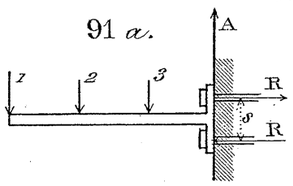
89.



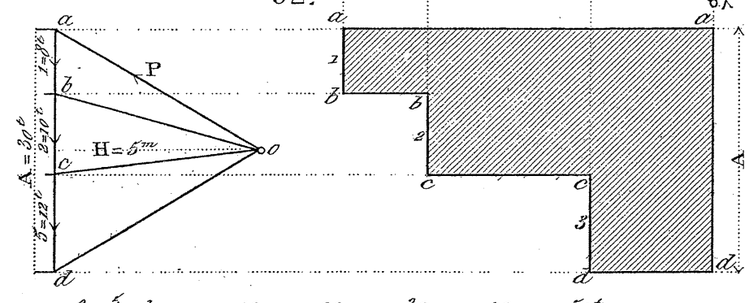
91.



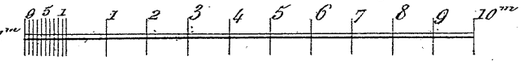
91 a.



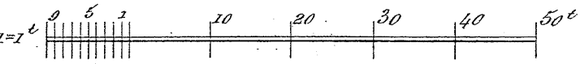
92.



0m,005=1mm

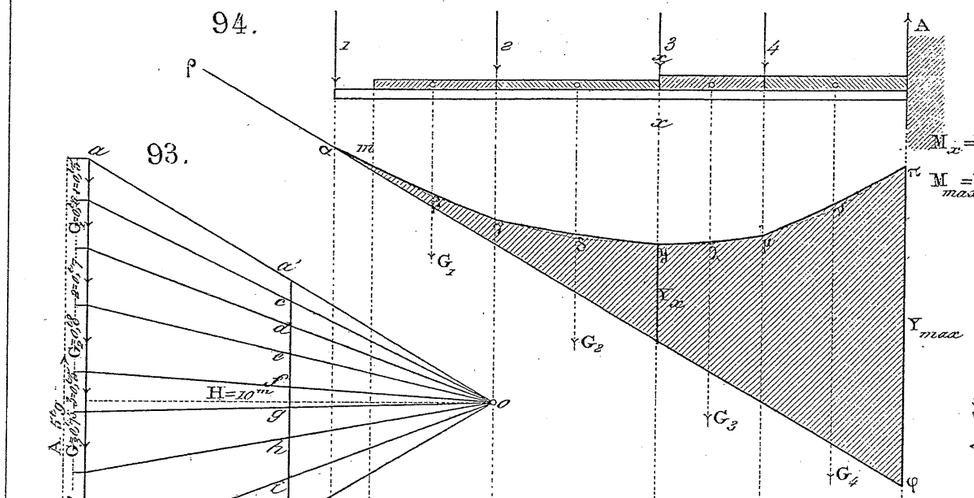


0m,001=1t

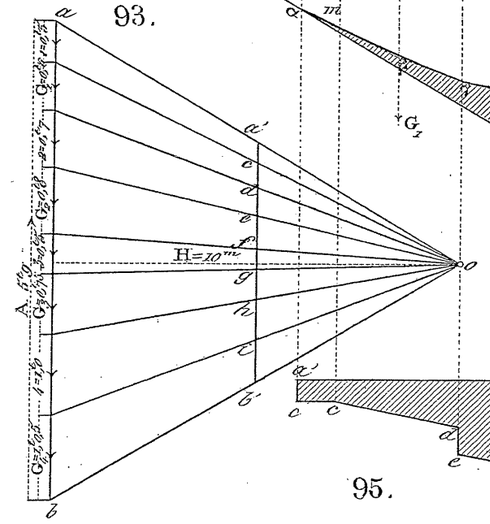


Établt et imprie de J.B andry à Liège.

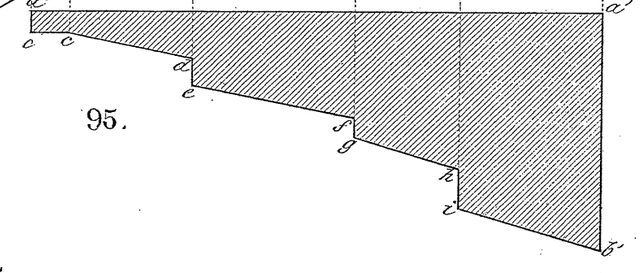
94.



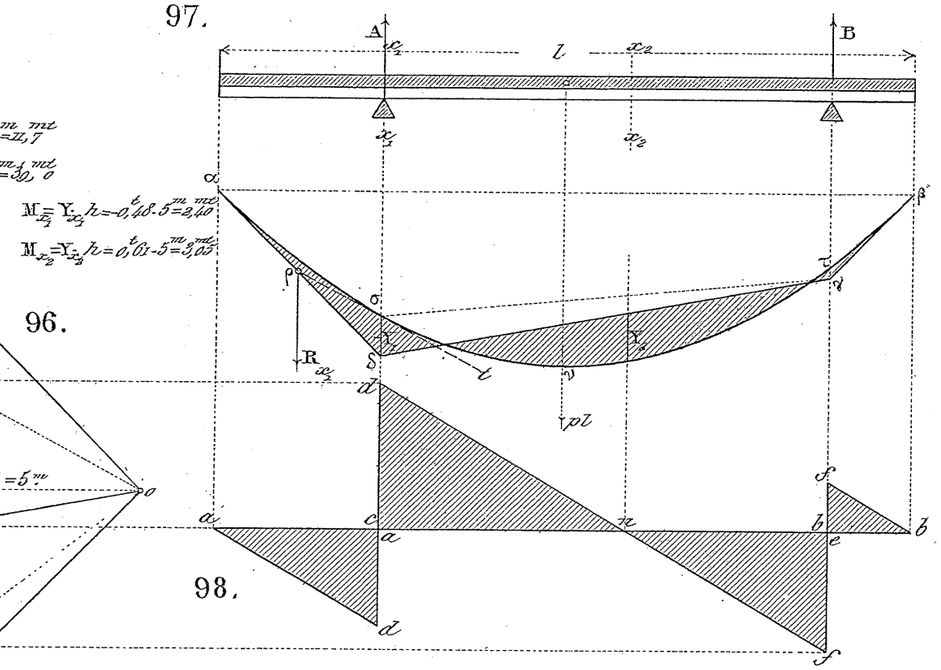
93.



95.



97.



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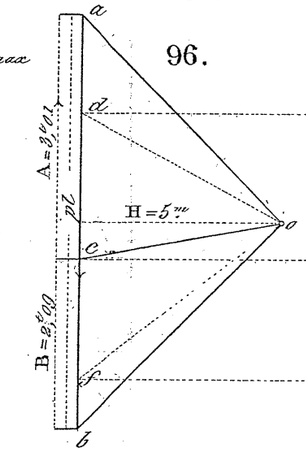

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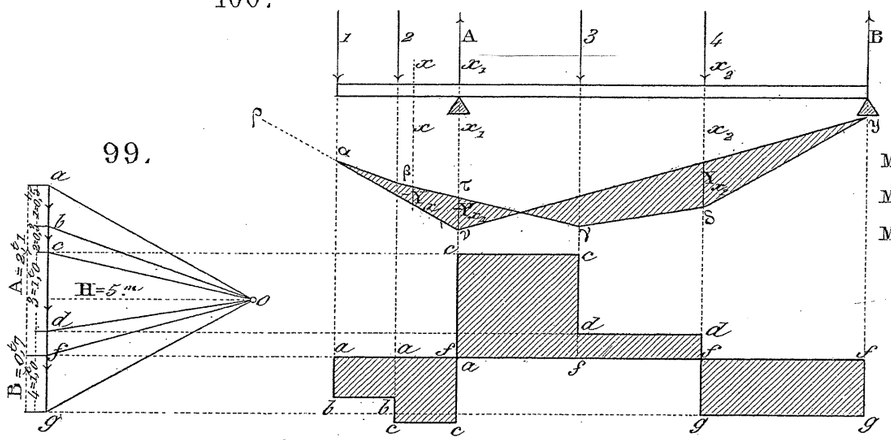
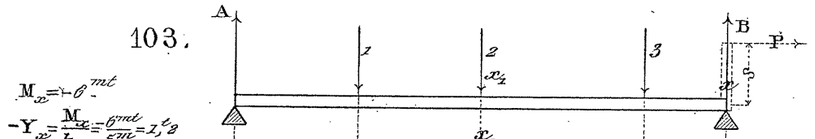


99.

101.

103.



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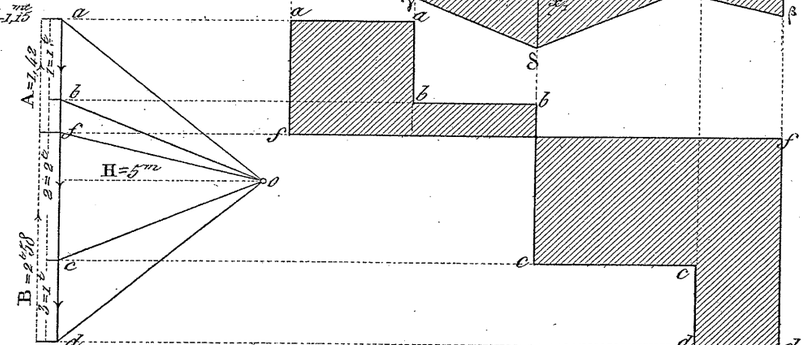
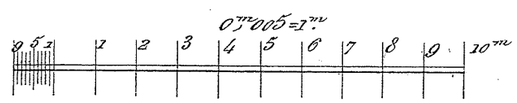
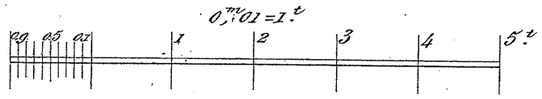


104.

$0^m,005 = 1^m$



$0^m,01 = 1^t$



Établt et Imprt de J. Baudry, à Liège

107.

$1^t = 5^{mm}$

$1^m = 5^{mm}$

109.

108.

$H = 3^m$

110.

111.

112.

105.

106.

113.

$1^t = 5^{mm}$

$1^m = 5^{mm}$

114.

$H = 4^m$

116.

$M_{p_{max}} = \alpha\beta \cdot h = 1{,}2 \cdot 3^m = 3{,}6^{mt}$

$M_{p^t_{max}} = \alpha\delta \cdot h = 4{,}8 \cdot 3^m = 14{,}4^{mt}$

$M_{p^r_{max}} = \alpha\eta \cdot h = 6{,}0 \cdot 3^m = 18{,}0^{mt}$

$1^t = 0{,}^m005$

$1^m = 0{,}^m005$

115.

$M_{max}\, rb \cdot h = 4{,}02 \cdot 4^m = 16{,}^{mt}08$

$M'_{max}\, sb \cdot h = 3{,}96 \cdot 4^m = 15{,}^{mt}84$

$1^t = 10^{mm}$

$1^m = 15^{mm}$

117.

$M_{max} = Y \cdot h = 1{,}07 \cdot 2^m = 2{,}^{mt}14$

$N_{max}\, III\,III = 4{,}^t15$.

118.

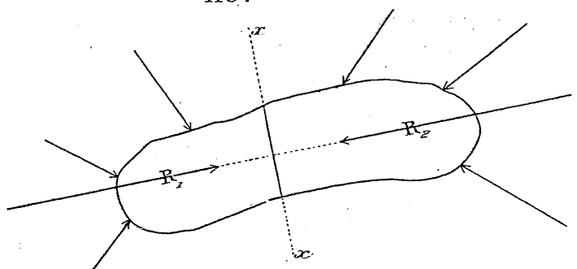
$h_1 = 2^m$

$1^t = 0{,}^m01$

$1^m = 0{,}^m015$

Etablissement Imprimerie de J. Baudry, à Liège.

119.



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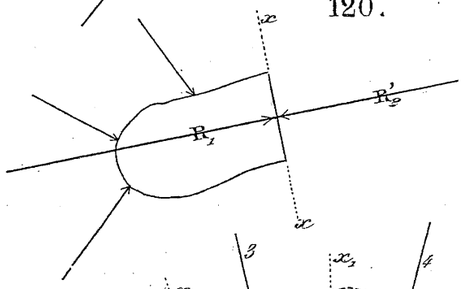

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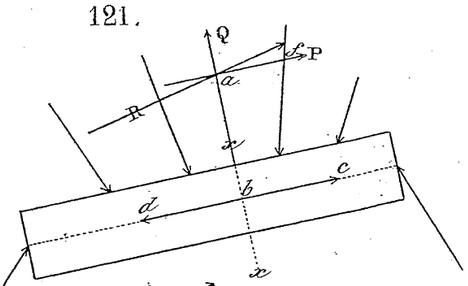

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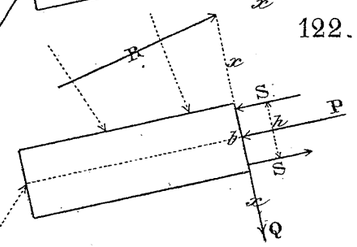

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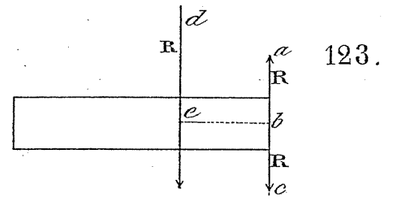

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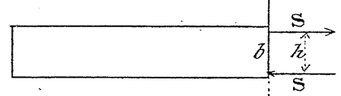

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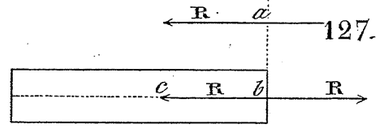

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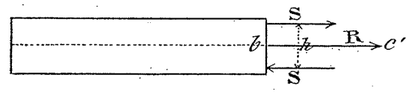

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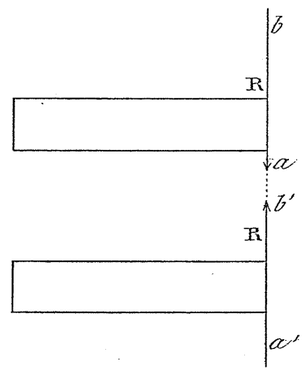

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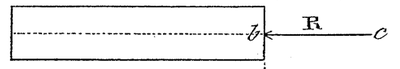

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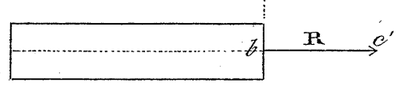

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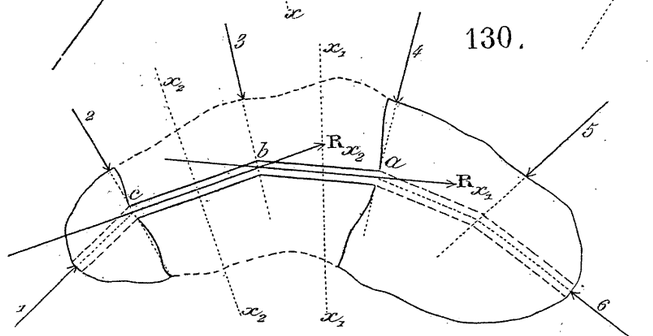

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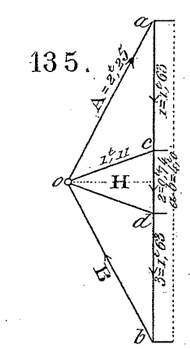

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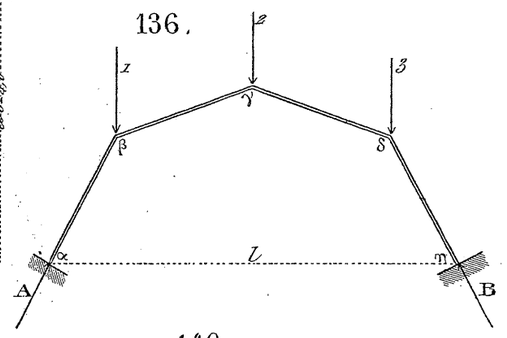

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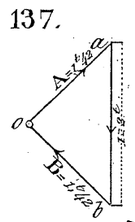

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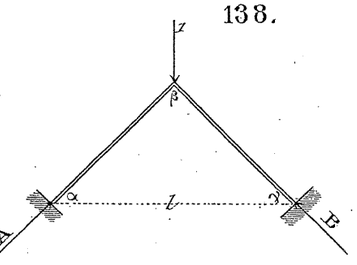

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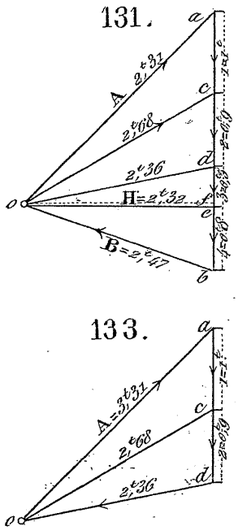

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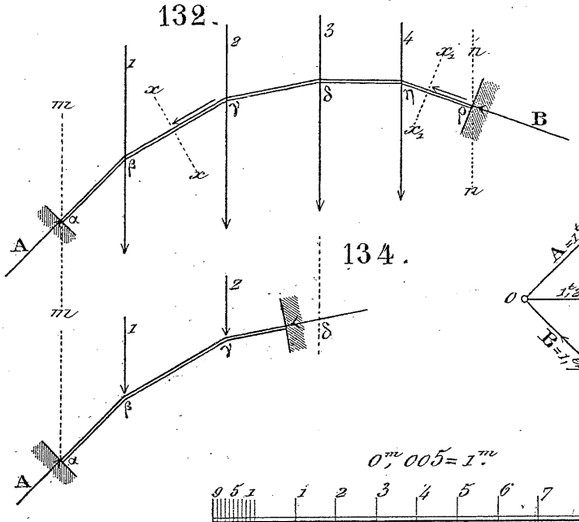

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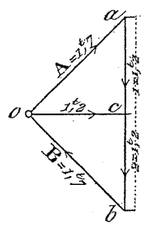

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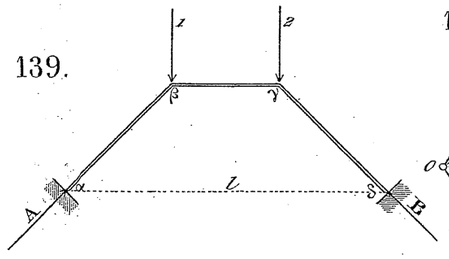

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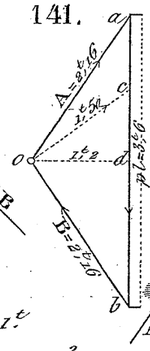

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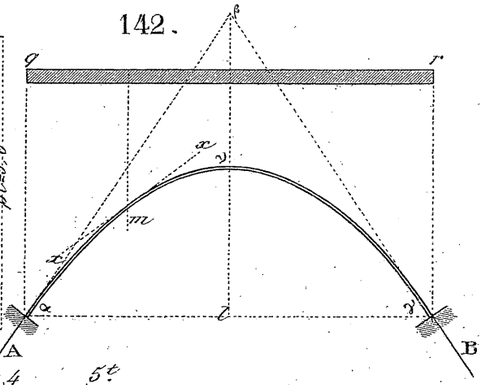

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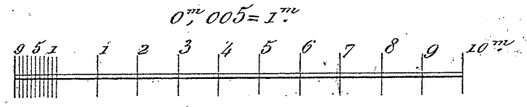

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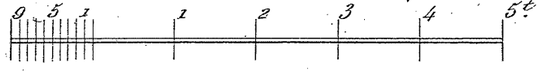

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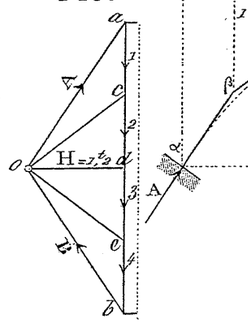
143.



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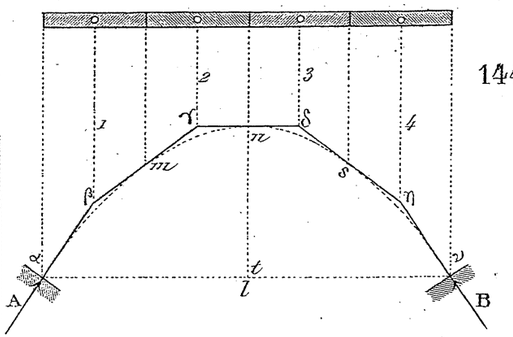

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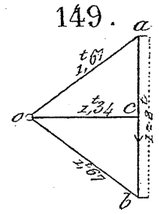

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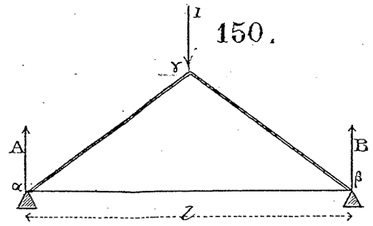

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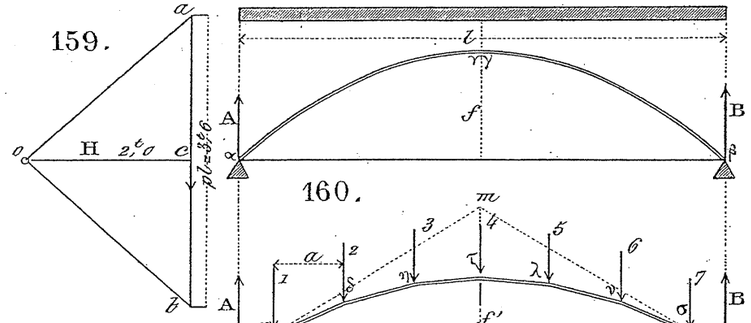

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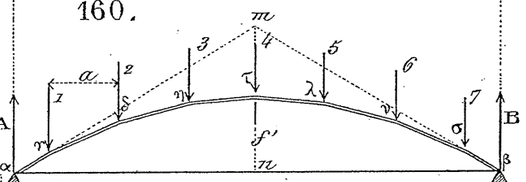

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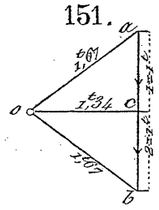

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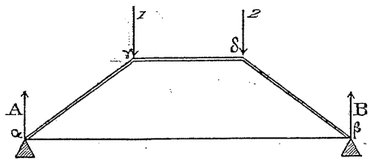

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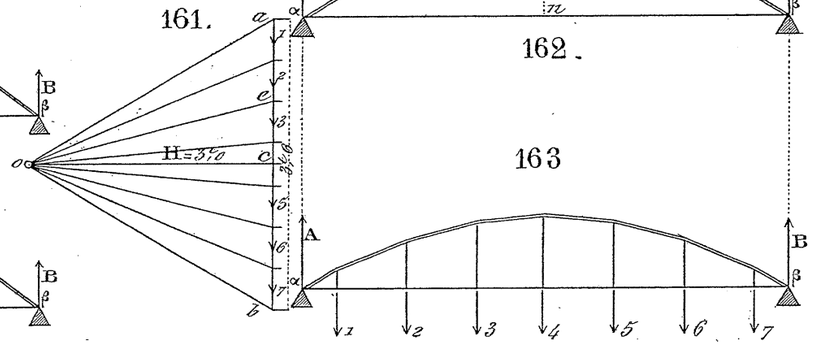

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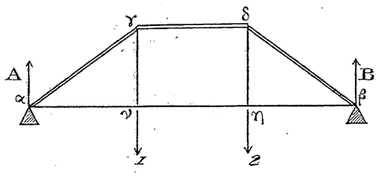

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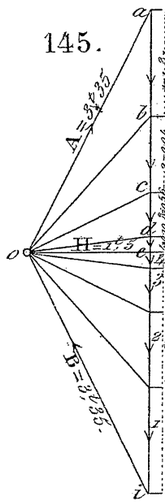

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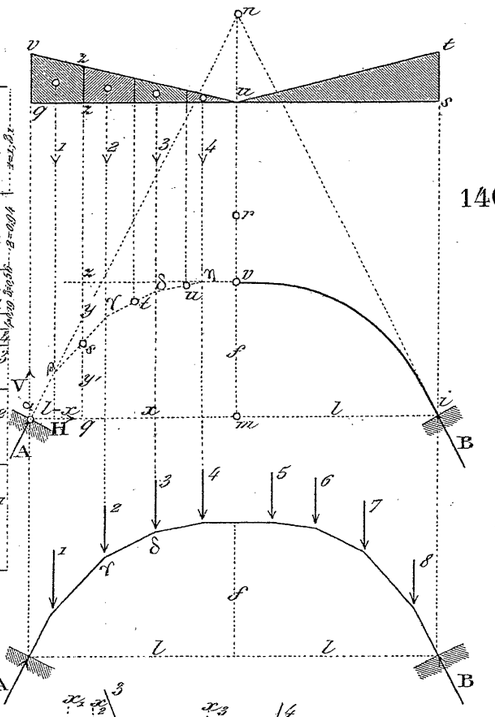

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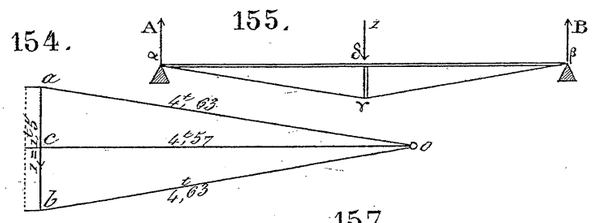

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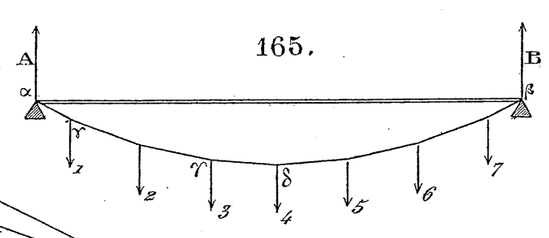

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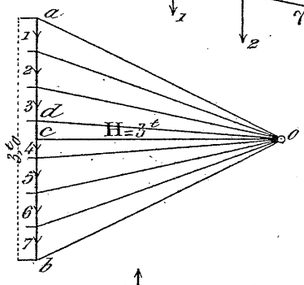

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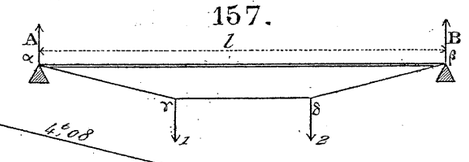

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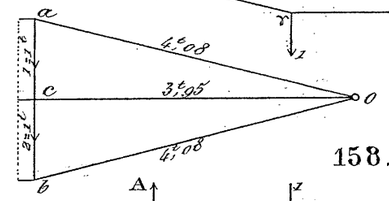

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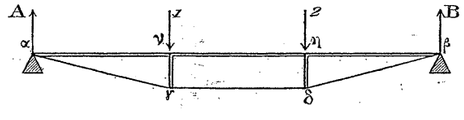

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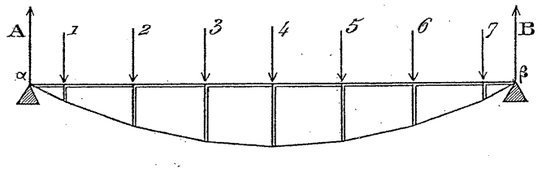

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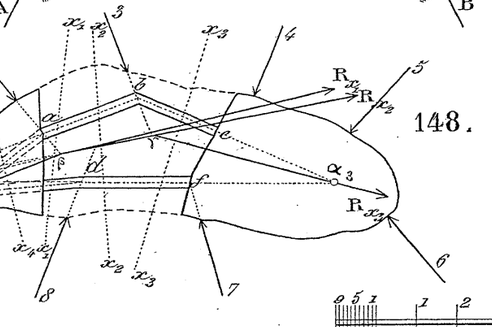

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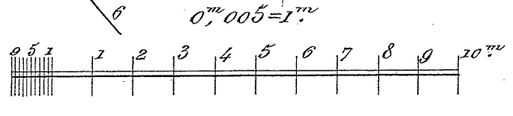
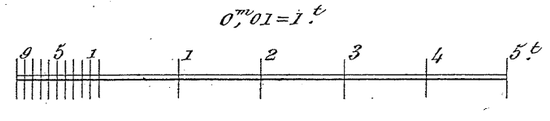
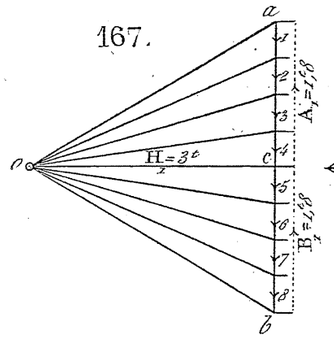




Établ.t et imp.ie de J. Bastary, à Liège.

167.



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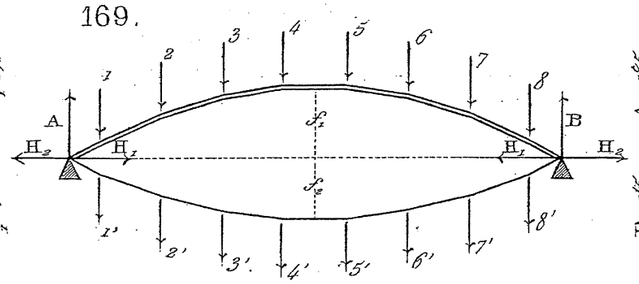

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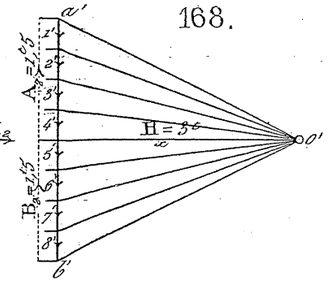

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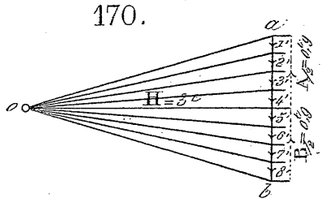

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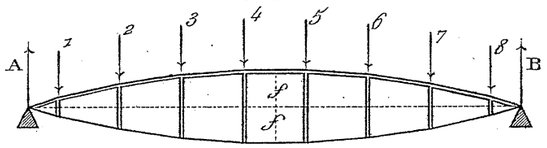

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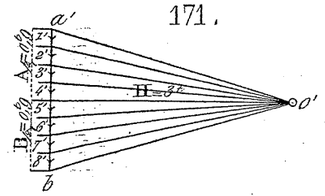

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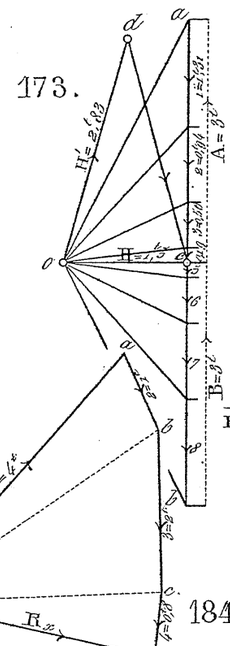
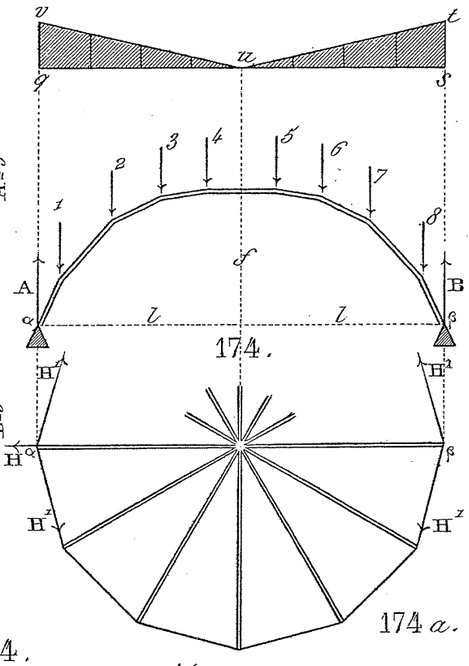
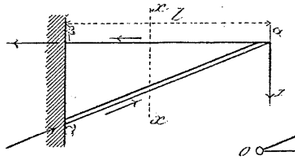




174.

174 a.

175.



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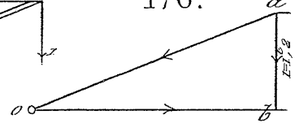

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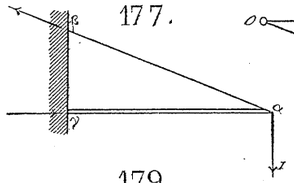

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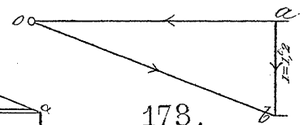

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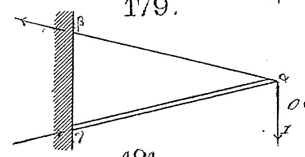

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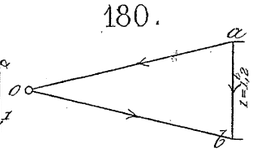

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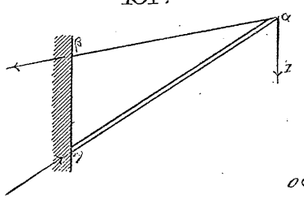

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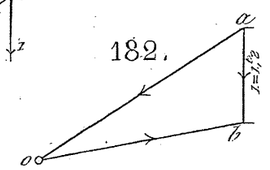

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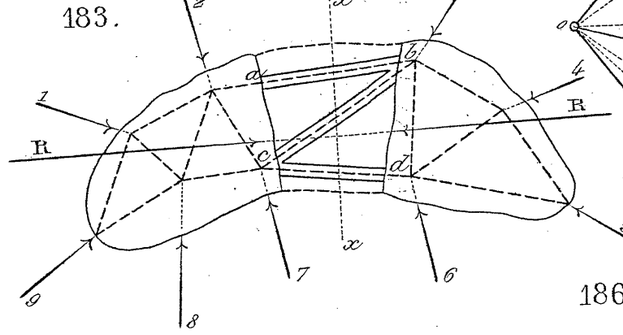

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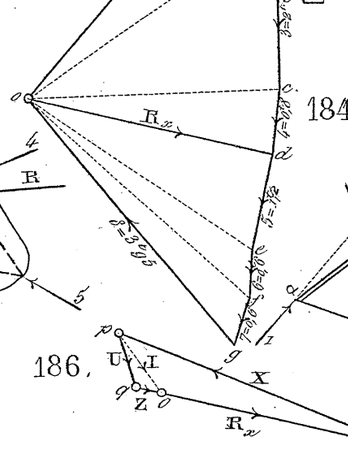

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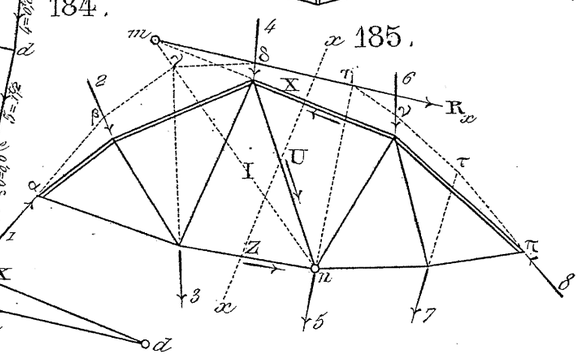

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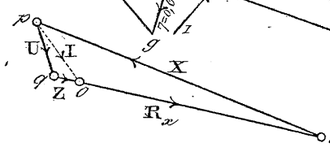

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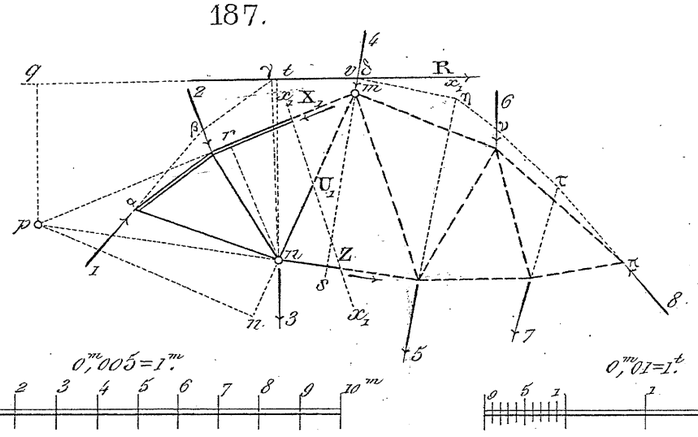

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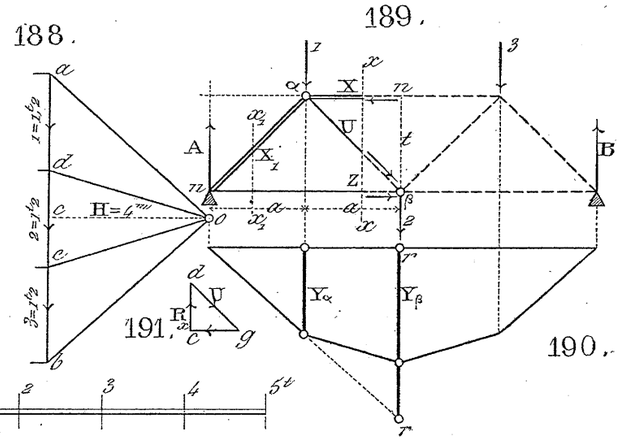

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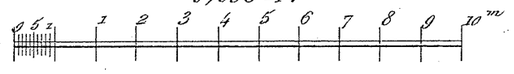
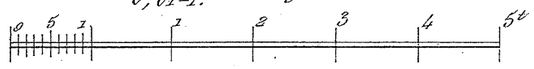
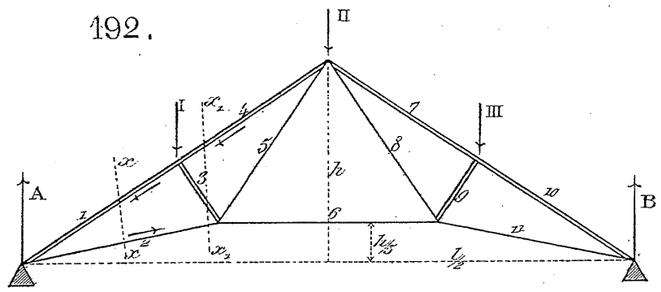
191.





Établt et impr.ie de J. Baudry, à Liège.

192.



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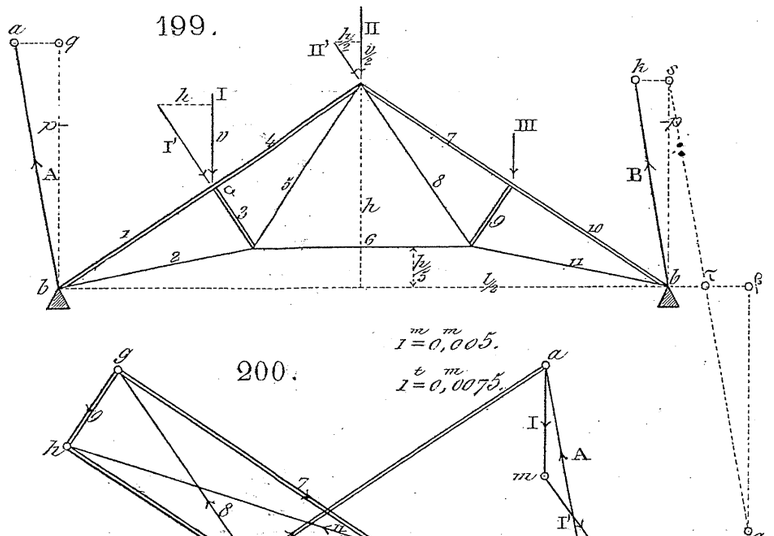

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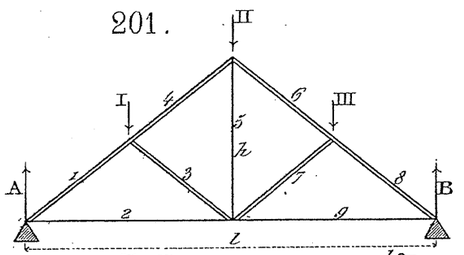


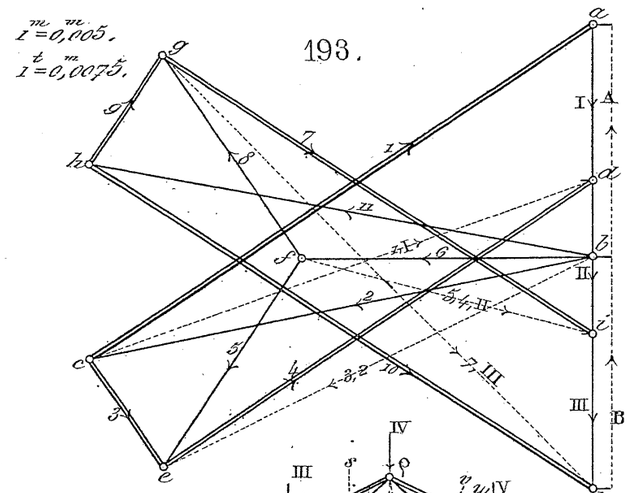
$^{m}\,l = 0{,}005.$

$^{t}\,l = 0{,}01.$

193.

$^{m}\,l = 0{,}005.$

$^{t}\,l = 0{,}0075.$



200.

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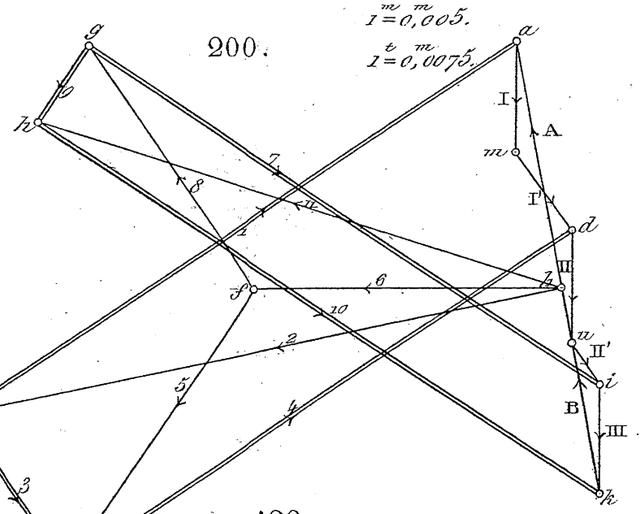
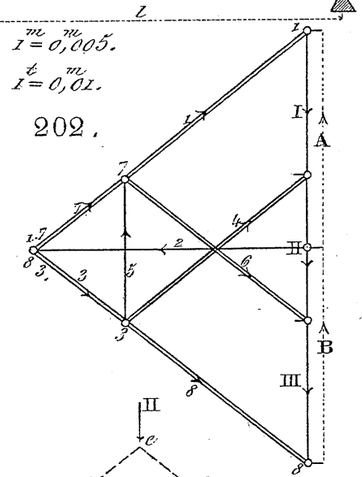
$^{t}\,l = 0{,}0075.$



202.



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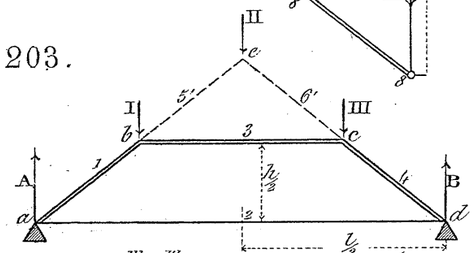

$^{m}\,l = 0{,}005.$

$^{t}\,l = 0{,}01.$

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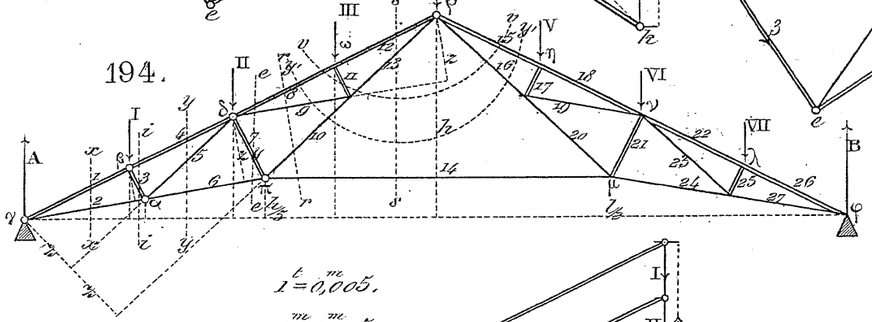

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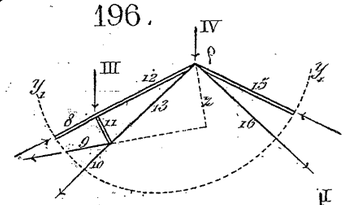

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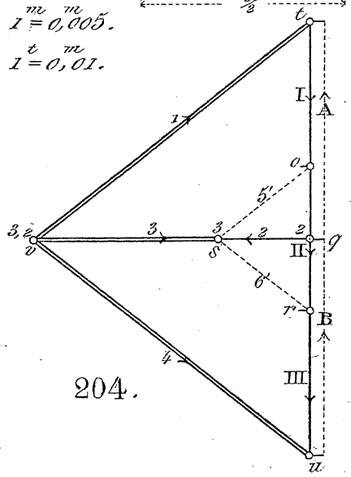

$^{t}\,l = 0{,}005.$

$^{m}\,l = 0\,^{m}005.$

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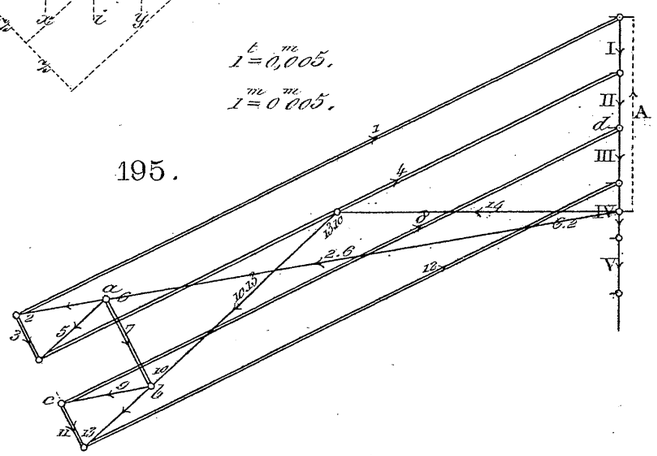

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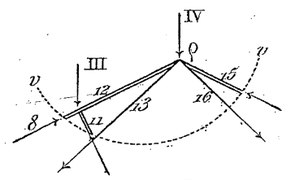
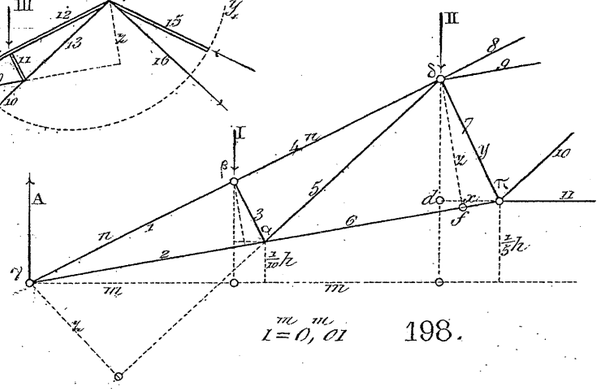
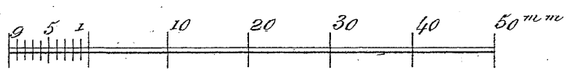


$^{m}\,l = 0{,}01$

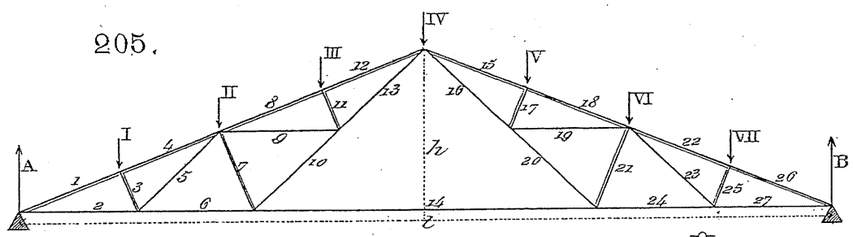
198.



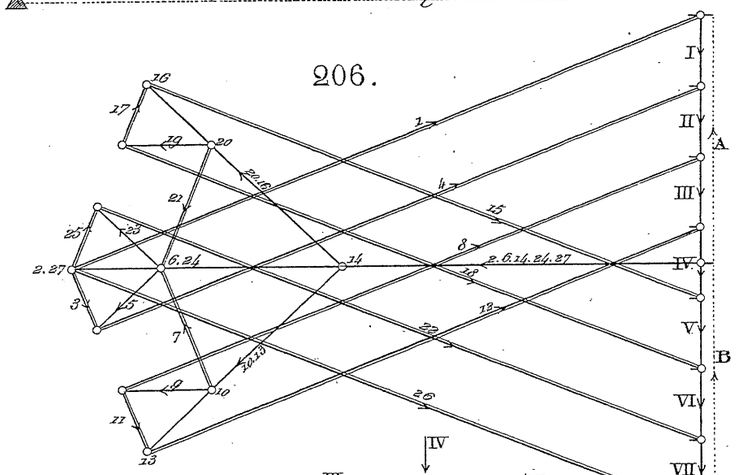


Etablt et impre de J. Baudry, à Liège.

205.



206.



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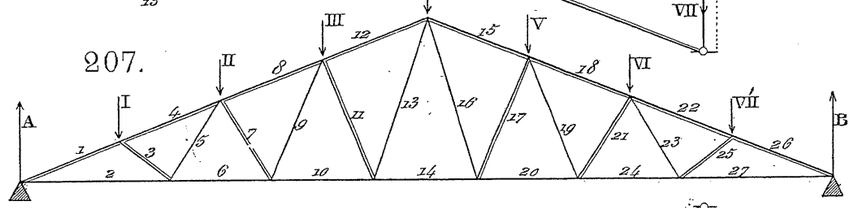

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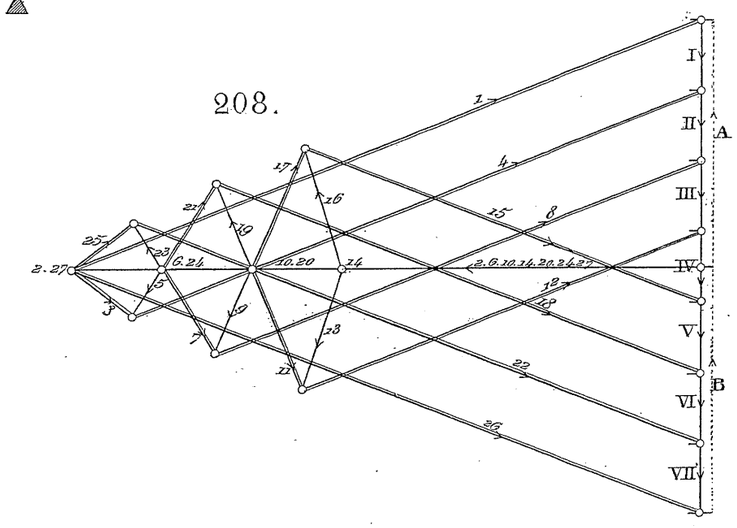

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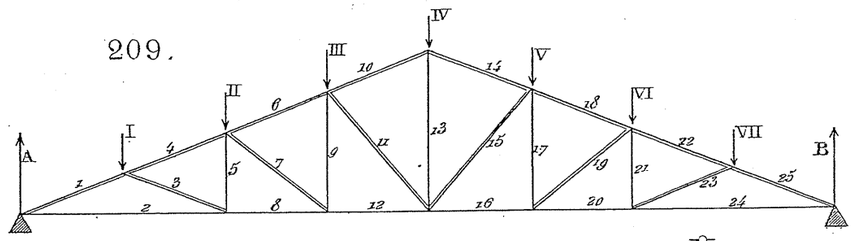
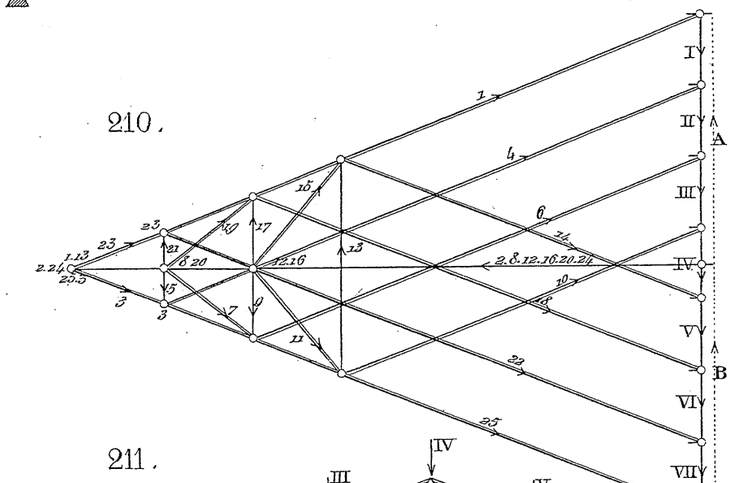
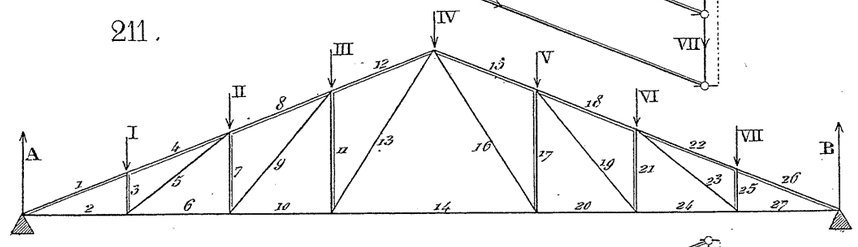


210.



211.



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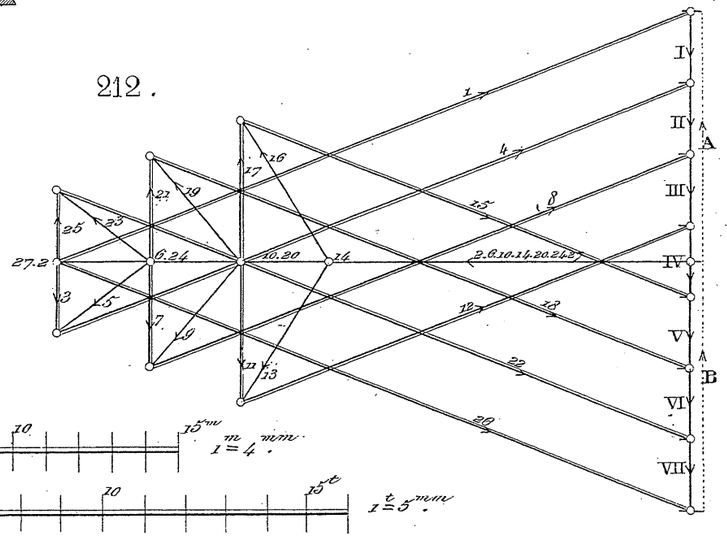

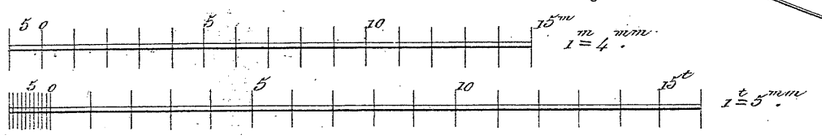

Éadit.re et imp.re du J. Baudry, à Liége.

227.

213.

228.

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226a.

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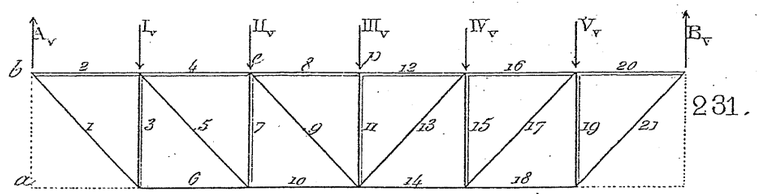
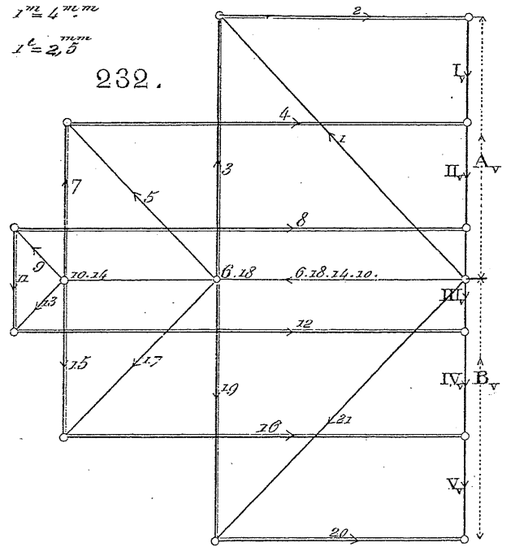
223.

Bruxelles impᵐᵉ de J. Bonaert, à Liège.

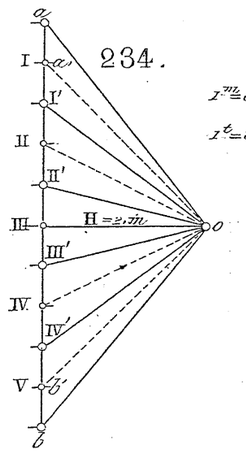
231.



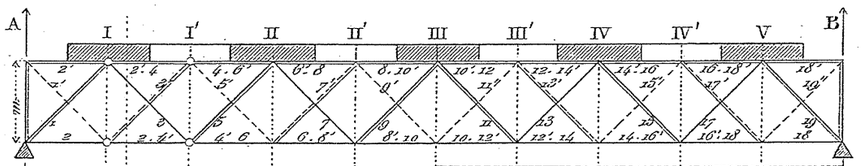
232.



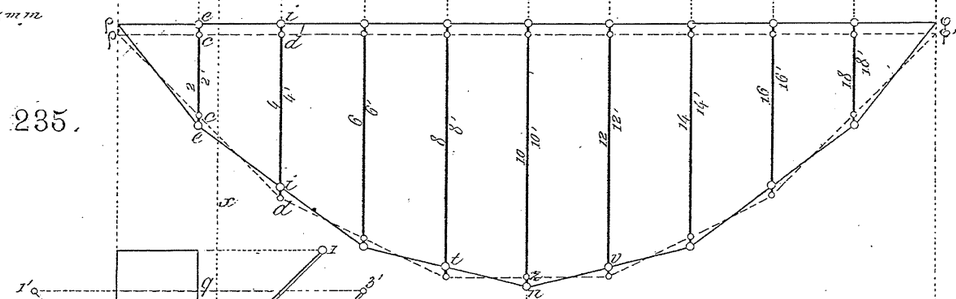
234.



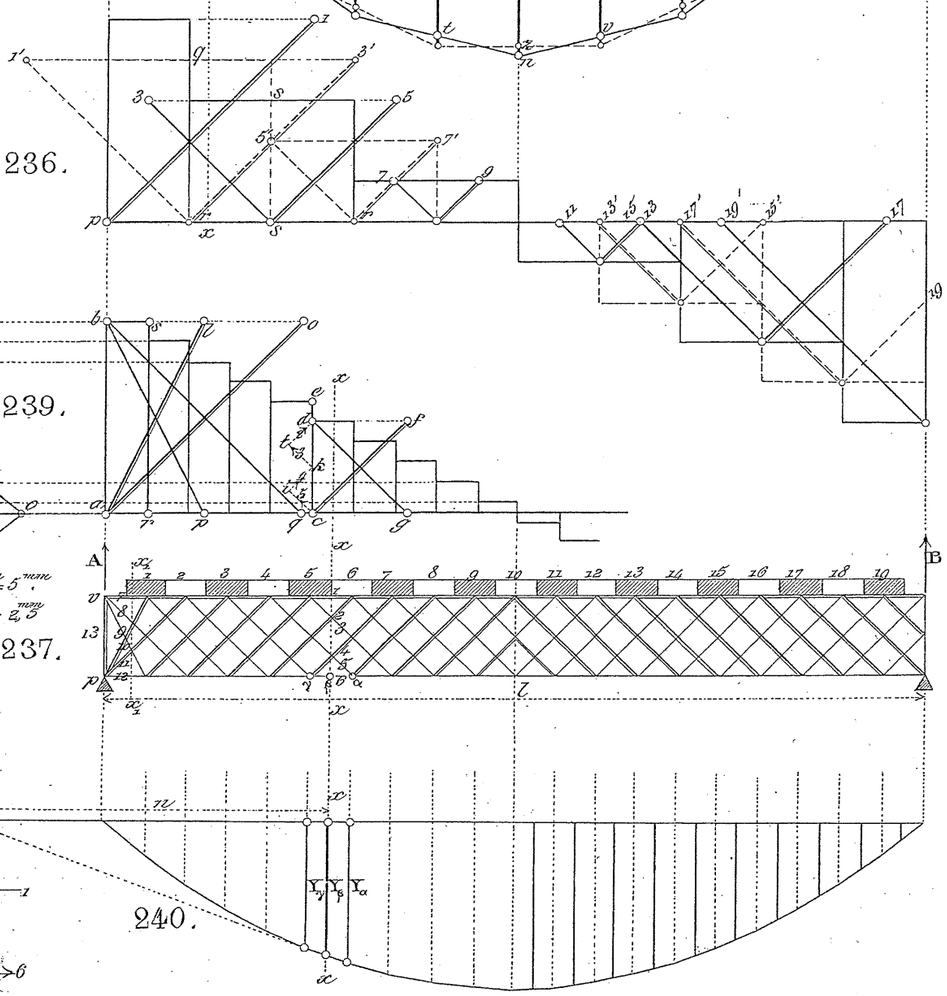
233.



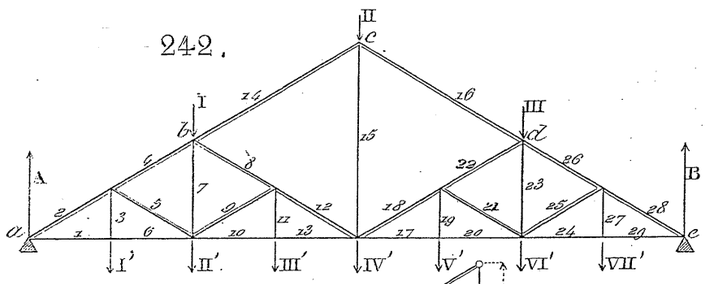
235.



236.



242.



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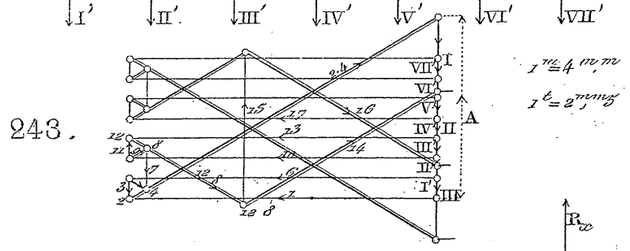

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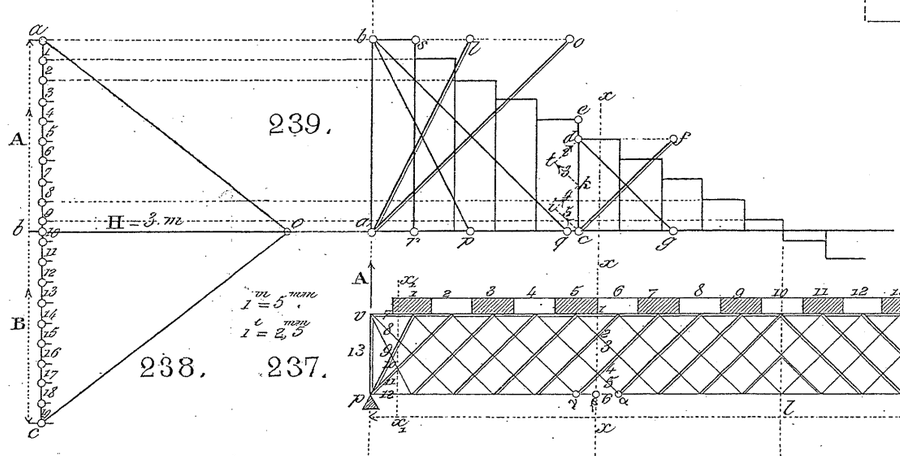
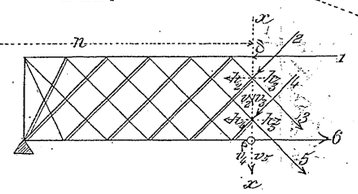


238.

237.

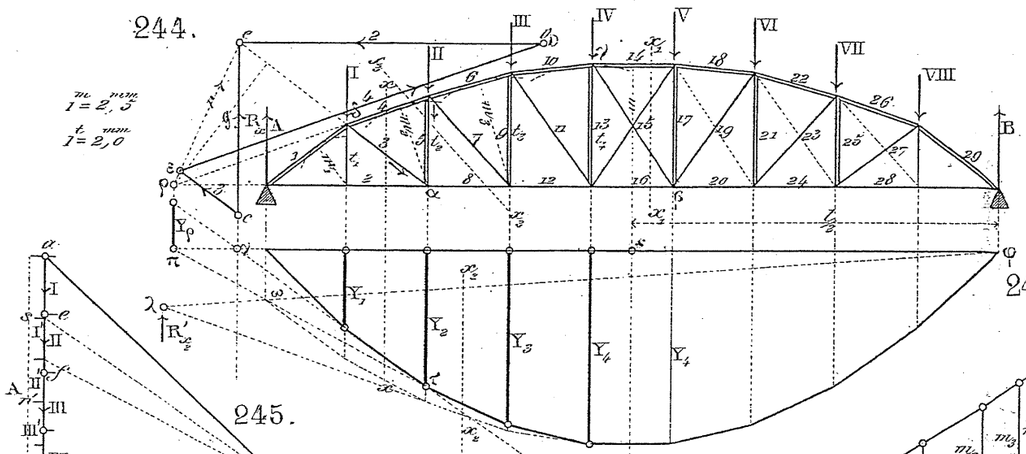
241.



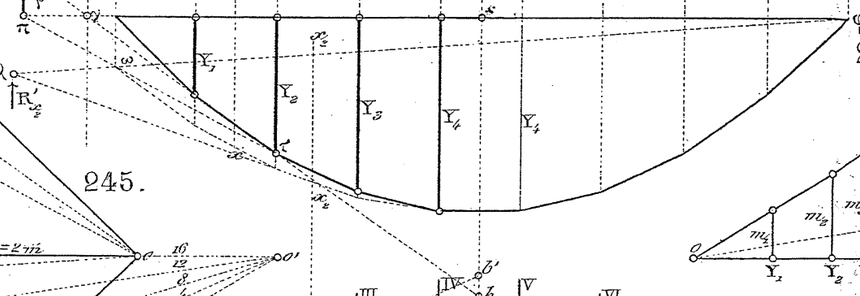
240.

Établiz et impr.ie de J.Baudry, à Liége.

244.



246.



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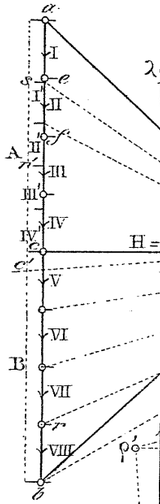
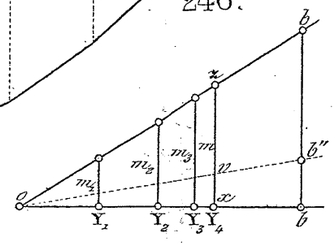
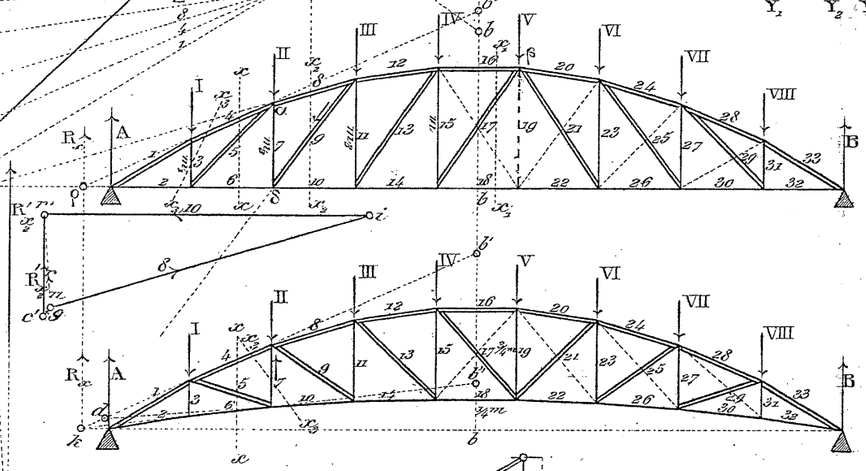


247.

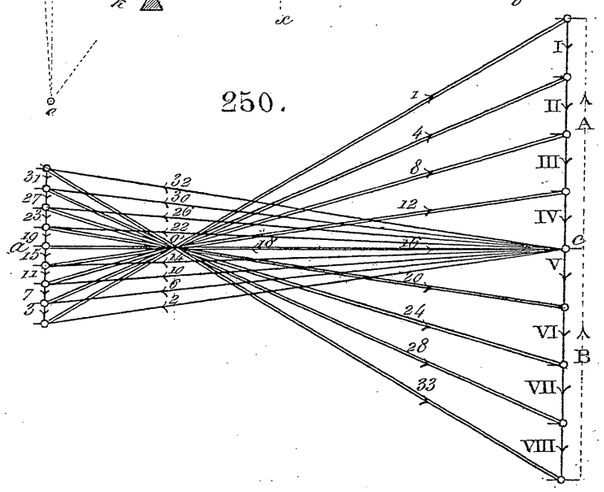


248.

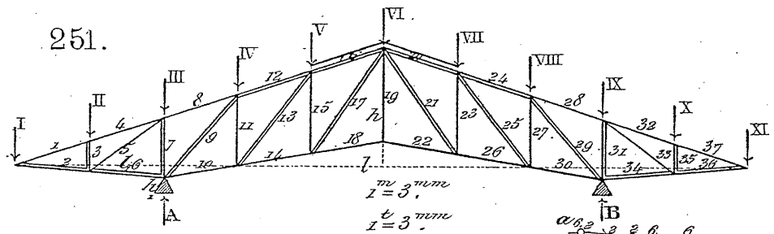


249.

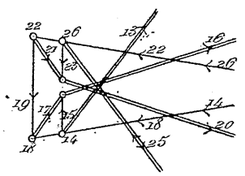
250.



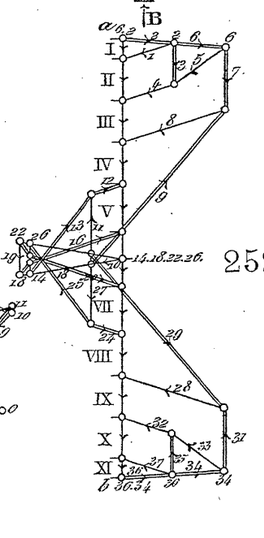
251.



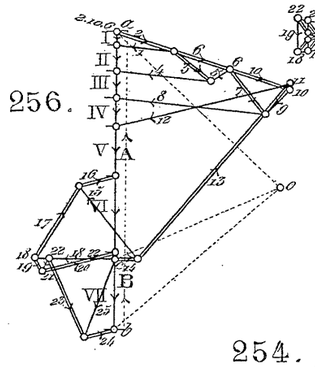
253.



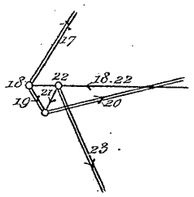
252.



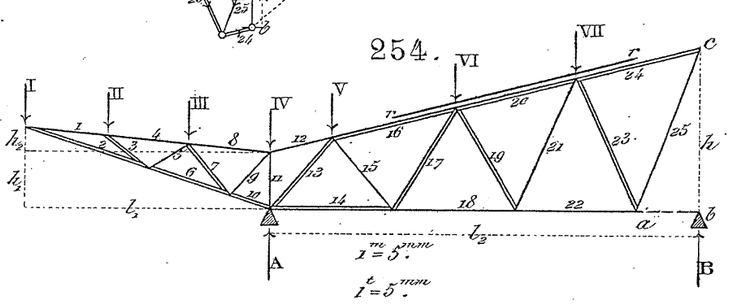
256.



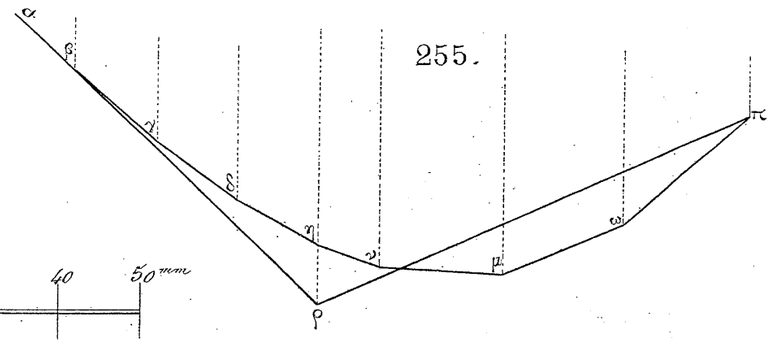
257.

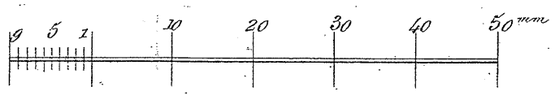


254.



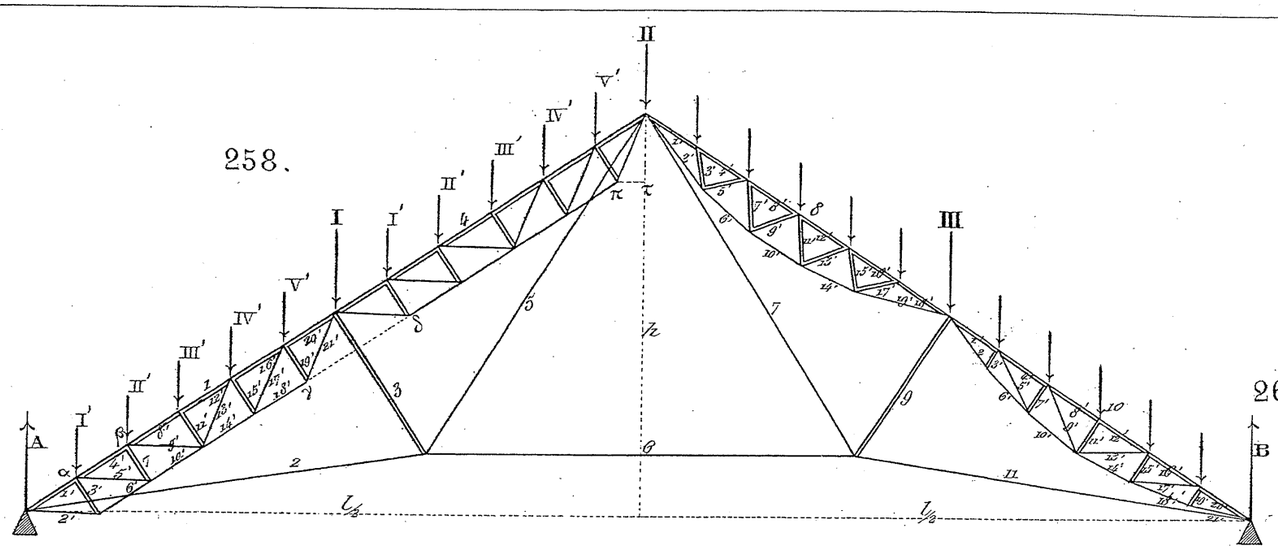
255.





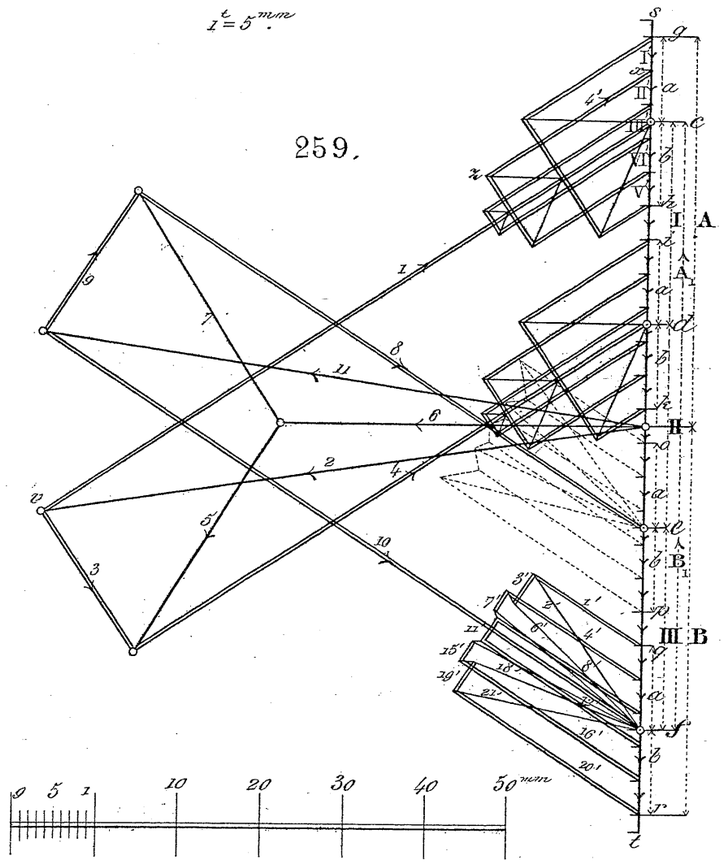
Établ.t imp.ie de J. Baudry, à Liége.

258.

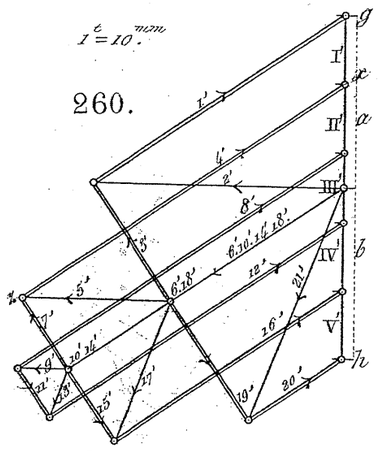


$1^m = 5^{mm}$.
$1^t = 5^{mm}$.

259.

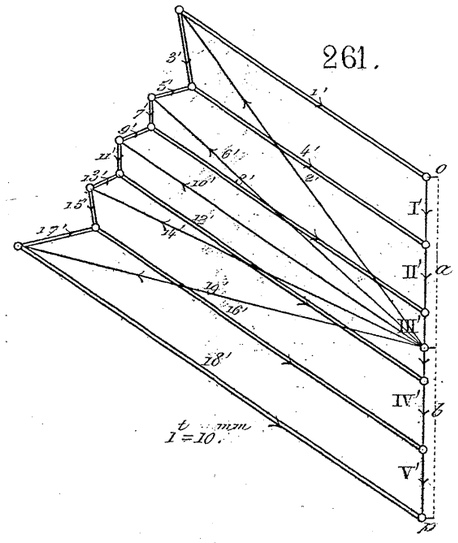


260.



$1^t = 10^{mm}$.

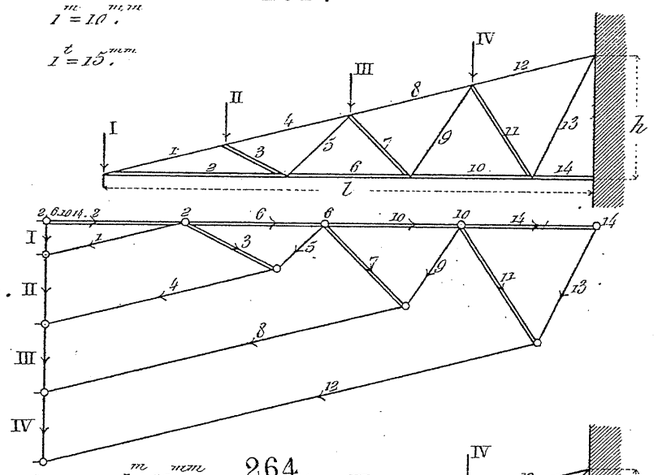
261.



$1^t = 10^{mm}$.

262.

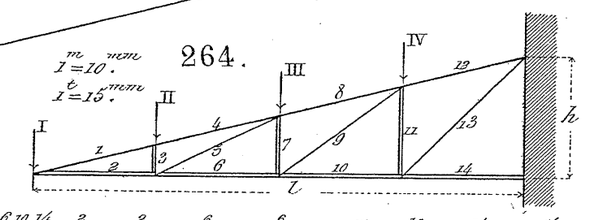
$1^m = 10^{mm}$.
$1^t = 15^{mm}$.



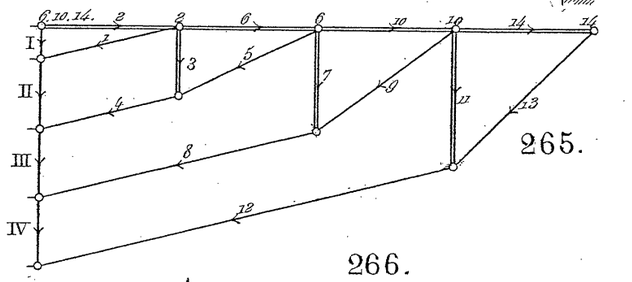
263.

264.

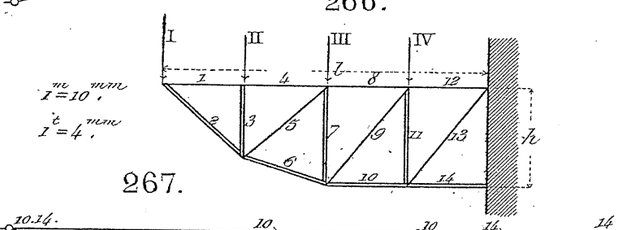
$1^m = 10^{mm}$.
$1^t = 15^{mm}$.



265.

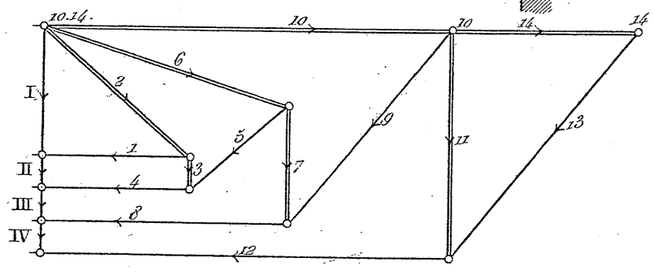


266.



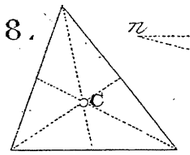
$1^m = 10^{mm}$.
$1^t = 4^{mm}$.

267.

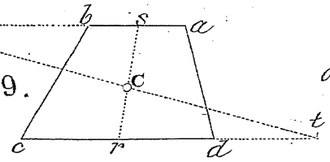


Fcddes et impres de J. Baudry, à Liège.

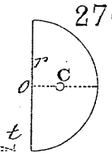
268.



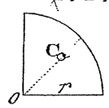
269.



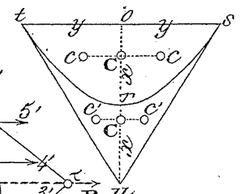
270.



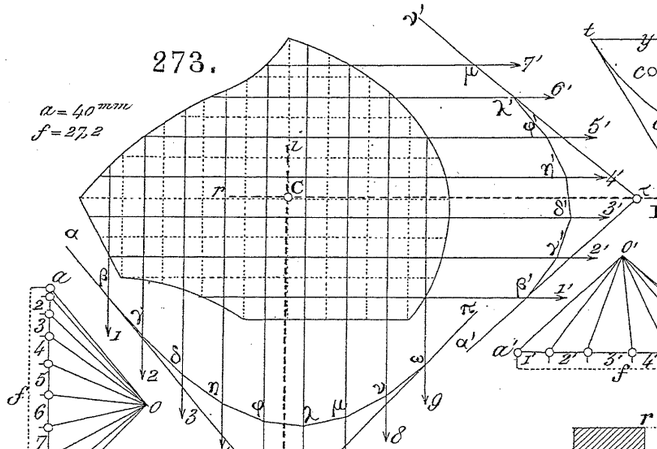
271.



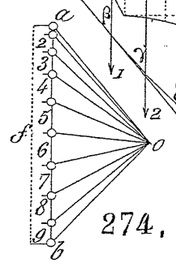
272.



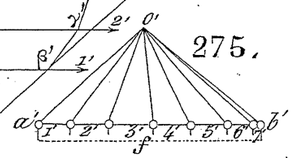
273.



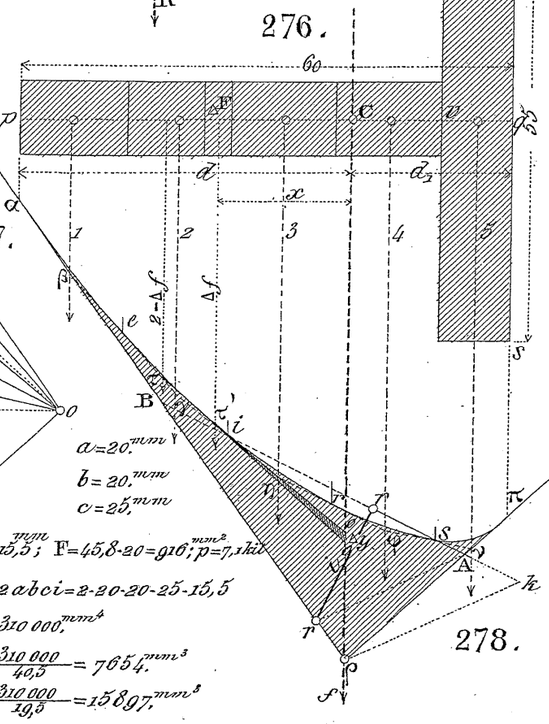
274.



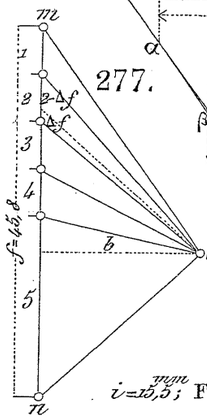
275.



276.



277.



278.

a=20.mm
b=20.mm
c=25.mm

$i = 15{,}5$ mm; $F = 45{,}8 \cdot 20 = 916$ mm²; $p = 7{,}3$ kil.

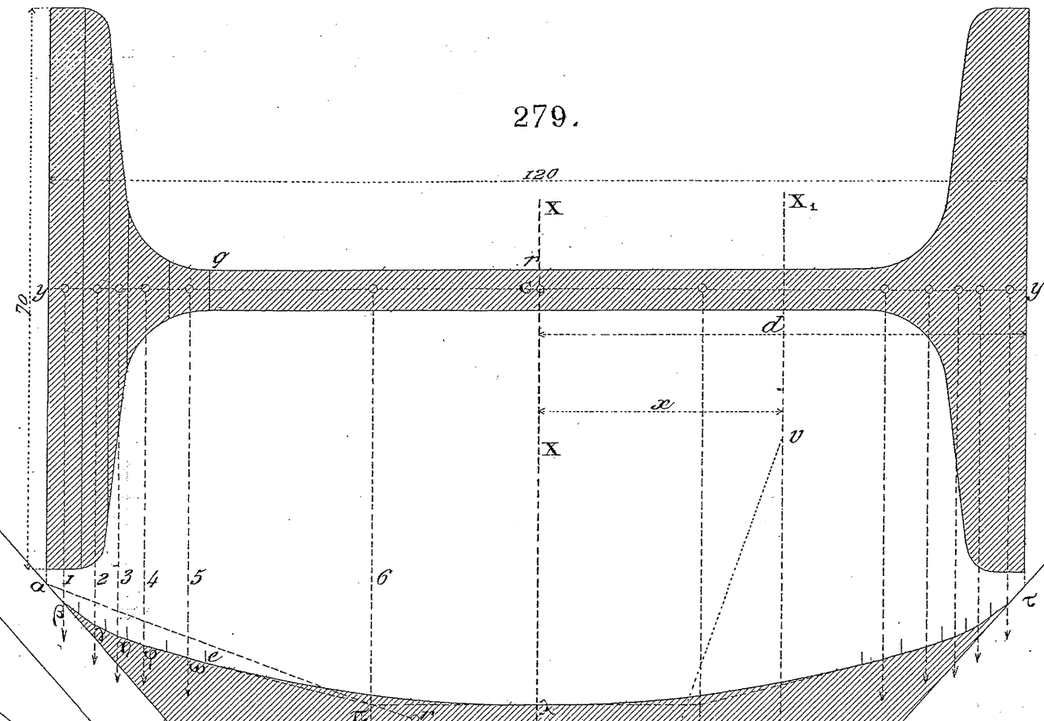
$J = 2abci = 2 \cdot 20 \cdot 20 \cdot 25 \cdot 15{,}5$

$J = 310\,000$ mm⁴

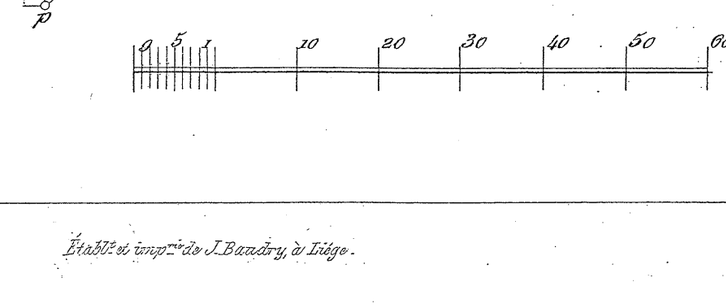
$\frac{J}{d} = \frac{310\,000}{40{,}5} = 7654$ mm³

$\frac{J}{d_1} = \frac{310\,000}{19{,}5} = 15897$ mm³

279.



280.



a=20.mm
b=40.mm
c=60.mm

281.

$i = 46.$ mm

$i_1 = 16{,}84.$ mm

$F = f \cdot a = 89{,}8 \cdot 20 = 1796$ mm²

$p = 14$ kil.

$J = 2abci = 2 \cdot 20 \cdot 40 \cdot 60 \cdot 46$

$J = 4416000$ mm⁴

$\frac{J}{d} = \frac{J}{c} = \frac{2abci}{c} = 2abi$

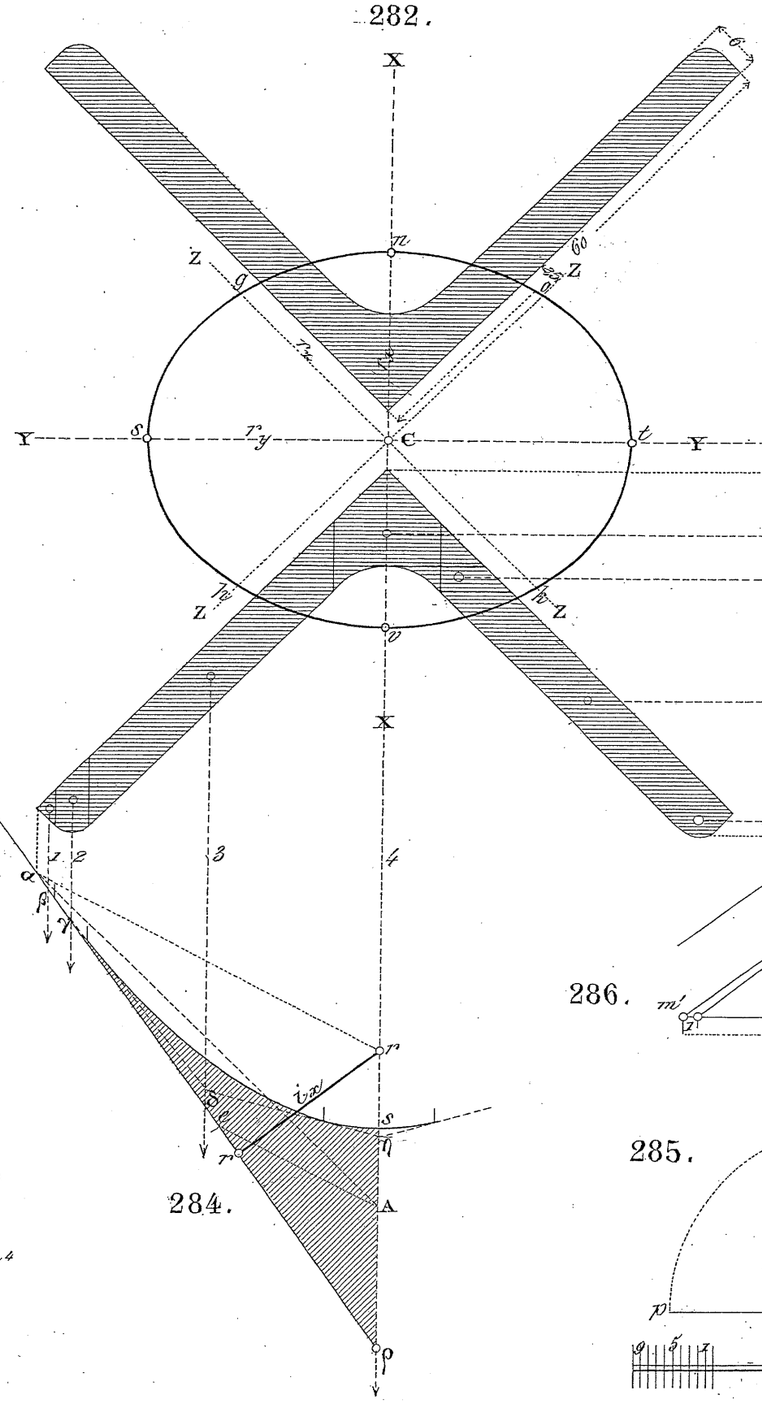
$\frac{J}{d} = 2 \cdot 20 \cdot 40 \cdot 46 = 73600$ mm³

$J_1 = 2abc(i + i_1) =$

$J_1 = 2 \cdot 20 \cdot 40 \cdot 62{,}84 = 6032400$

Établ.t et impr.ie de J. Baudry, à Liége.

282.



$a = 20^{mm}$

$b = 25^{mm}$

$c = 34,5^{mm} = \frac{f}{2}$

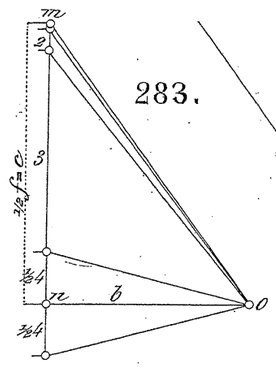
$f = 69$

$F = 69 \cdot 20 = 1380^{mm^2}$

$\frac{1}{2}p = 5,37$ kil.

$p = 10,75$ kil.

283.



$i_x = 21,5^{mm}$

$J_x = 2\,a\,b\,c\,i_x^2 = a\,b\,f\,i_x^2$

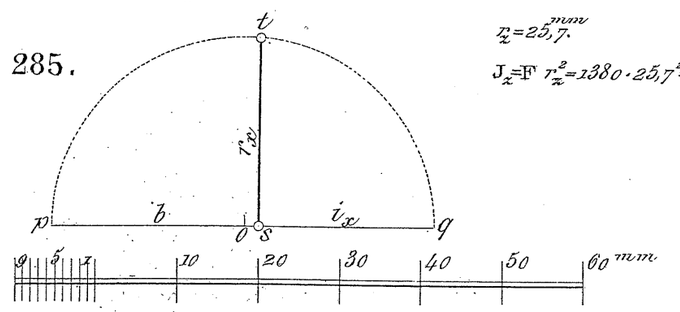
$J_x = 20 \cdot 25 \cdot 69,8 \cdot 21,5 = 741750^{mm^4}$

$r_x = \sqrt{b\,i_x} = \sqrt{25\,21,5} = 23,2^{mm}$

$J_x = F\,r_x^2 = 69 \cdot 20 \cdot 23,2^2 = 741750^{mm^4}$

284.

285.



$i_y = 35,25^{mm}$

$J_y = 2\,a\,b\,c\,i_y = a\,b\,f\,i_y$

$J_y = 20 \cdot 25 \cdot 69,0 \cdot 35,25 = 1216125^{mm^4}$

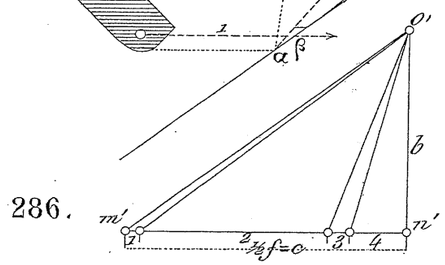
$r_y = \sqrt{b \cdot i_y} = \sqrt{25 \cdot 35,25} = 29,7^{mm}$

$J_y = F\,r_y^2 = 69 \cdot 29,7^2 = 1215780^{mm^4}$

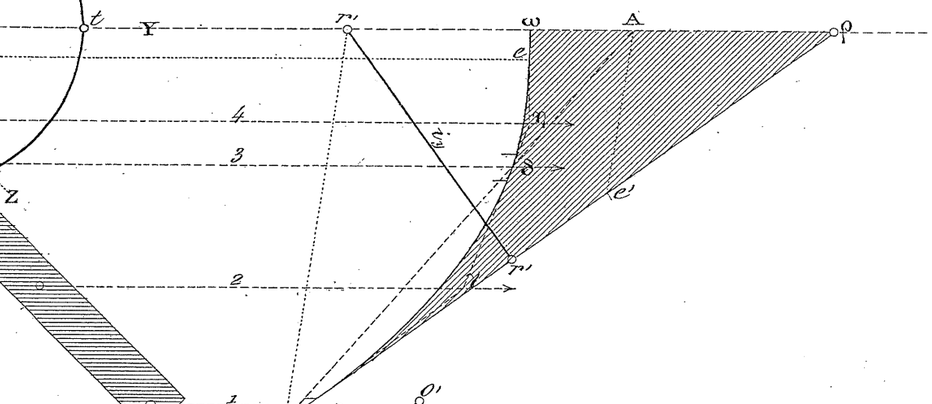
$r_x = 25,7^{mm}$

$J_x = F\,r_x^2 = 1380 \cdot 25,7^2 = 918583^{mm^4}$

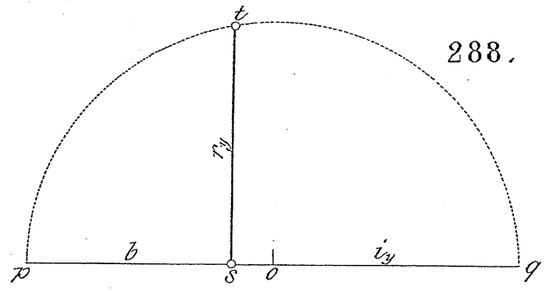
286.



287.



288.



Établiss.ts imp.ries de J. Baudry, à Inzigen.